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EPA Region 5 Records Ctr.



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## ***ATTACHMENTS***

### ***Final Design Report Soil Operable Unit***

***Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois***

***February 2004***



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Minneapolis, MN 55435  
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**Attachments**  
**Final Design Report**  
**Soil Operable Unit**

**Waukegan Manufactured Gas and Coke Plant Site**  
**Waukegan, Illinois**  
**February 2004**

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Attachment E	Health and Safety Plan
Attachment F	Operation and Maintenance Plan
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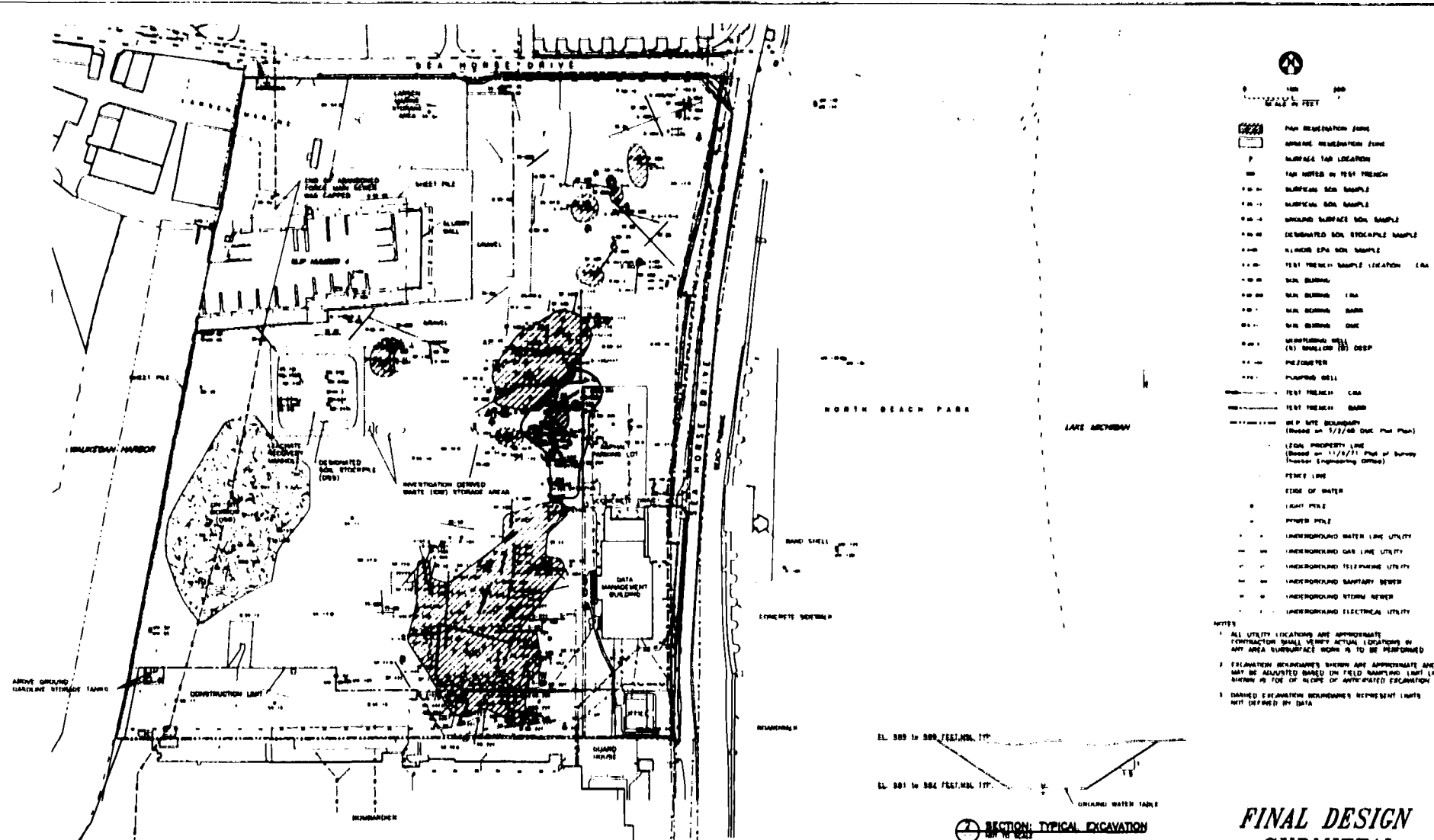
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BARR PROJECT No.	13/49-015JS
CLIENT PROJECT No.	
DWG. No.	









PLAN, PROPOSED EXCAVATIONS  
1-118

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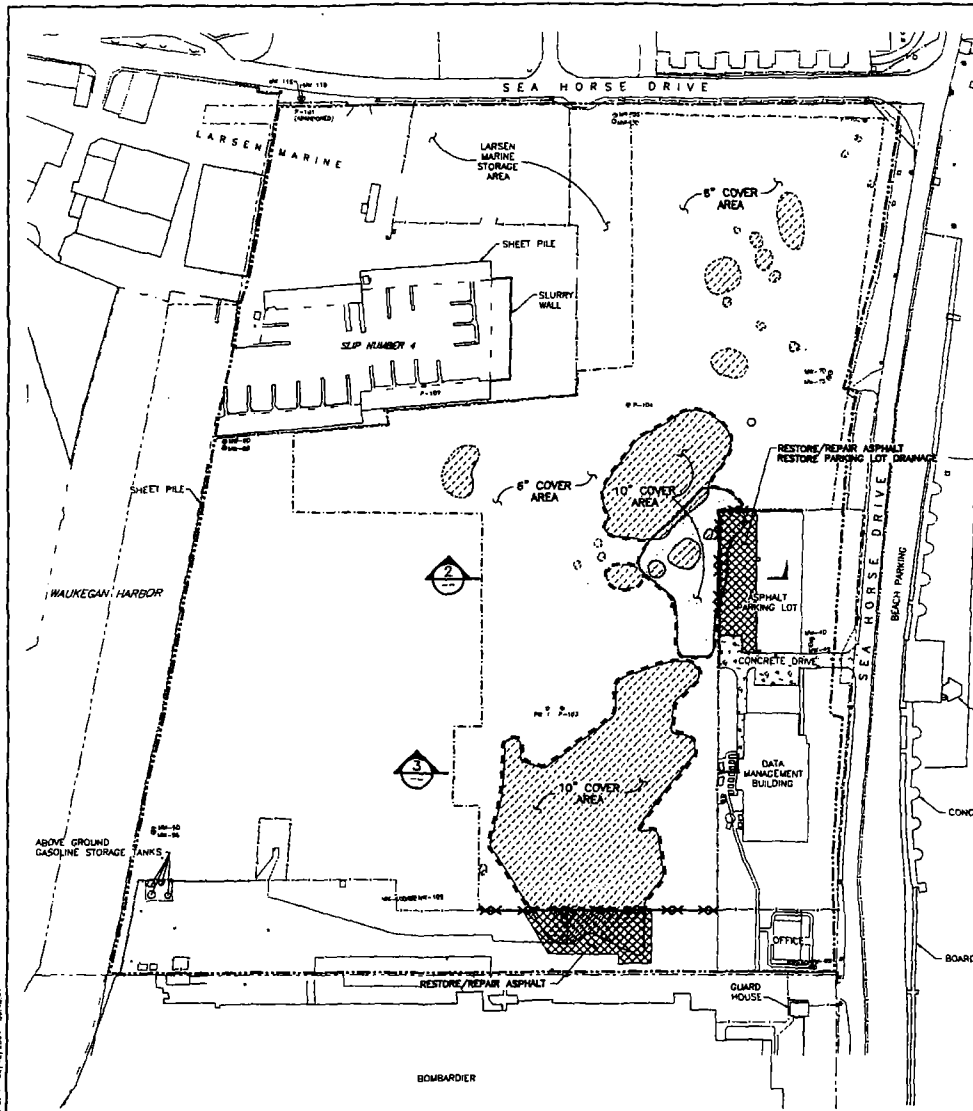
**FINAL DESIGN  
SUBMITTAL  
FEBRUARY 2004**

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**BARR**  
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**WAUKEGAN COKE PLANT GROUP**  
Waukegan, Illinois

SOIL REMEDIAL ACTION WAUKEGAN MANUFACTURED GAS & COKE PLANT SITE		SOIL PROJECT NO. 13/48-018/SL078	
PROPOSED EXCAVATIONS		CLIENT PROJECT NO.	
DRW NO. C-04	REV NO. A		

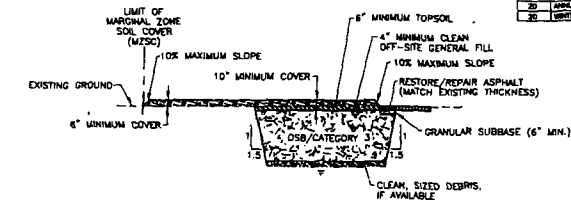


① PLAN: FINAL GRADE, EXTENT OF COVER, AND REPLANTING  
1"=100'-0"

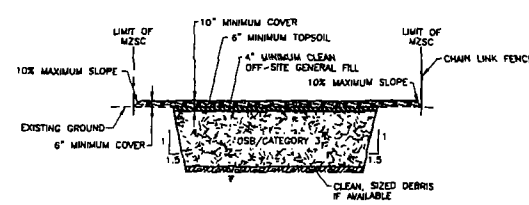
- 0 100 200  
SCALE IN FEET
- MARGINAL SOIL ZONE
  - WCP SITE BOUNDARY (Based on 3/2/48 GMC Plot Plan)
  - LEGAL PROPERTY LINE (Based on 11/4/71 Plat of Survey, Trocker Engineering Office)
  - FENCE LINE
  - REPAIR CHAIN LINK FENCE
  - EDGE OF WATER
  - LIGHT POLE
  - POWER POLE
  - MONITORING WELL (S)-SHALLOW (D)-DEEP
  - PEZOMETER
  - PUMPING WELL
  - PAH REMEDIATION ZONE
  - ARSENIC REMEDIATION ZONE

- NOTES:
1. ALL UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS IN ANY AREA SUBSURFACE WORK IS TO BE PERFORMED.
  2. CONTRACTOR SHALL PROTECT ALL REMAINING WELLS AND REPAIR WELLS THAT ARE DAMAGED.
  3. ALL DISTURBED AREAS WITHIN THE UNPAVED FENCED AREA OF THE SITE, WITH THE EXCEPTION OF GRAVEL SURFACED AREAS, AND INCLUDING ANY DISTURBED AREAS OF THE OSB, SHALL BE SEEDED ACCORDING TO THE SEED SCHEDULE. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SEED SCHEDULE			
AREA/LOCATION	SEED TYPE	SEED RATE	REMARKS
OSB	GRASS	25	
OSB	LEGUMINOUS GRASS	25	
OSB	PERENNIAL GRASS	25	
OSB	PERENNIAL GRASS	25	
OSB	PERENNIAL GRASS	25	
OSB	PERENNIAL GRASS	25	
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OSB	PERENNIAL GRASS	25	
OSB	PERENNIAL GRASS	25	
OSB	PERENNIAL GRASS	25	



② SECTION: SOILS COVER  
HORIZONTAL 1"=100'  
VERTICAL 1"=5'



③ SECTION: SOILS COVER  
HORIZONTAL 1"=100'  
VERTICAL 1"=5'

**FINAL DESIGN  
SUBMITTAL  
FEBRUARY 2004**

<b>BARR</b> Project Office: BARR ENGINEERING CO. 4700 WEST 77TH STREET MINNEAPOLIS, MN 55435-4863 Tel: 1-800-452-2277 Fax: (612) 837-2601 www.barr.com				Date: AS SHOWN Date: 03/05/03 Location: PLN Drawn: Checked: Approved:				Waukegan COKE PLANT GROUP Waukegan, Illinois				SOIL REMEDIAL ACTION WAUKEGAN MANUFACTURED GAS & COKE PLANT SITE FINAL GRADE, EXTENT OF COVER, AND PLANTING				BARR PROJECT No. 13/49-015JSLO CLIENT PROJECT No. Date: No. C-05 Rev:			
NO. BY CHK. APP. DATE REVISION DESCRIPTION				CLIENT NO. 13/49-015JSLO PROJECT NO. 13/49-015JSLO DATE RELEASED: 03/05/03 DATE RELEASED: 03/05/03				RELEASED TO: FOR				DATE RELEASED: 03/05/03				DATE RELEASED: 03/05/03			

# **TECHNICAL SPECIFICATIONS WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE SOIL OPERABLE UNIT**

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### **LIST OF ACRONYMS**

### **DIVISION 1 GENERAL REQUIREMENTS**

- Section 01110 Summary of Work
- Section 01270 Measurement and Payment *(not included with this submittal)*
- Section 01311 Coordination and Meetings
- Section 01330 Procedures for Technical Submittals
- Section 01500 Construction Facilities and Site Control
- Section 01501 On-Site Health and Safety Requirements
- Section 01503 Contingency Plan
- Section 01505 Mobilization/Demobilization
- Section 01571 Soil Erosion and Sedimentation Control
- Section 01710 Emission Controls and Air Monitoring
- Section 01720 Equipment Decontamination

### **DIVISION 2 SITE CONSTRUCTION**

- Section 02120 Loading, Transportation and Disposal of Contaminated Materials
- Section 02144 Wastewater Treatment, Discharge, and Monitoring
- Section 02197 Debris Decontamination and Management
- Section 02231 Clearing and Grubbing
- Section 02240 Storm Water Diversion
- Section 02300 Excavation, Staging, Backfill, and Compaction
- Section 02528 Well Abandonment
- Section 02630 Storm Drainage Repair and Replacement
- Section 02745 Bituminous Concrete Pavement
- Section 02820 Fencing
- Section 02945 Tallgrass Establishment
- Section 02946 Tallgrass Maintenance Plan

# **TECHNICAL SPECIFICATIONS WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE SOIL OPERABLE UNIT**

## **LIST OF ACRONYMS**

ACM	Asbestos Containing Materials
ARZ	Arsenic Remediation Zone
ASTM	American Society for Testing and Materials
BTEX	Benzene, Toluene, Ethyl Benzene, Xylenes
CFR	Code of Federal Regulations
DSS	Designated Soil Stockpile
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPEP	High Density Polyethylene Pipe
IDOT	Illinois Department of Transportation
IDW	Investigation Derived Waste
IEPA	Illinois Environmental Protection Agency
NAPL	Non-Aqueous Phase Liquid
OSB	On-Site Borrow
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PPE	Personal Protective Equipment
PRZ	PAH Remediation Zone
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
TASP	Temporary Accumulation Staging Pile
TCLP	Toxicity Characteristic Leaching Procedure
U.S. EPA	United States Environmental Protection Agency
WCP Group	Waukegan Manufactured Gas and Coke Plant Group

# **TECHNICAL SPECIFICATIONS WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE SOIL OPERABLE UNIT**

## **DIVISION 1 GENERAL REQUIREMENTS**

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- Section 01720 Equipment Decontamination



## SECTION 01110

### SUMMARY OF WORK

#### PART 1: GENERAL

##### 1.01 GENERAL DESCRIPTION OF WORK

- A. The overall scope of the Work, which is more fully described in these Specifications and the Drawings includes, but is not necessarily limited to, furnishing all labor, tools, equipment, and materials necessary to:
1. Mobilize and demobilize labor, equipment, materials, and temporary facilities.
  2. Perform any required site preparation operations including clearing and grubbing the work areas; abandoning wells, power and light poles in excavation areas; removing and/or constructing fences; defining work zones; preparing decontamination facilities; establishing roadways; preparing construction, support, and office facilities; providing traffic controls, security, and on-site health and safety requirements.
  3. Furnish, install and maintain erosion and surface water control features.
  4. Install and operate air emission and odor control equipment and measures.
  5. Excavate and backfill overburden soil as necessary to conduct the Work.
  6. Excavate approximately 28,500 cubic yards of material from the Polynuclear Aromatic Hydrocarbons (PAH) Remediation Zone (PRZ), and segregate and manage excavated materials according to a categorization system defined by the ENGINEER. After testing to confirm categorization, the excavated material is to be managed by off-site thermal treatment; off-site landfill at a Subtitle C facility; off-site landfill at a Subtitle D facility; or backfill on site. Excavated debris must be segregated and cleaned for sizing and backfill, recycling, or disposal.
  7. Excavate approximately 6,000 cubic yards of material from the Arsenic Remediation Zone (ARZ) and test to confirm categorization. The excavated material is to be managed by off-site landfill at a Subtitle D facility (or if testing shows it necessary, off-site thermal treatment or off-site landfill at a Subtitle C facility). Excavated debris must be segregated and cleaned for sizing and backfill, recycling, or disposal.
  8. Excavate approximately 4,000 to 5,000 cubic yards of contaminated material from the Designated Soil Stockpile (DSS) and transport for off-site disposal at a Subtitle D facility. Debris must be segregated and cleaned for sizing and backfill, recycling, or disposal.
  9. Remove and dispose of all drums containing investigation derived waste (IDW) (expected to be between 100 and 150 drums). The material in these drums is to be managed by off-

site landfill at a Subtitle D facility, except for the 5-gallon containers of tar saturated material, which are to be managed by off-site thermal treatment.

10. Backfill excavations with excavated material meeting the Record of Decision (ROD) cleanup criteria, On-Site Borrow (OSB), clean and sized debris, and/or clean off-site general fill.
  11. Select, treat, and discharge decontamination water and contaminated runoff water generated during the Work.
  12. Remove all temporary facilities and fences and restore parking surfaces and positive drainage of asphalt parking areas.
  13. Construct a soil cover over the Marginal Soil Zone and grade and seed all disturbed soil surfaces.
- B. These Specifications and Drawings were prepared in accordance with the Administrative Order on Consent for Remedial Design at the Waukegan Coke Plant, Waukegan, Illinois, United States Environmental Protection Agency (U.S. EPA) Docket No. V-W-01-C-651. All work by the CONTRACTOR must conform to the requirements of the ROD and Consent Decree for Remedial Action at the Waukegan Coke Plant, Waukegan, Illinois.
- C. It is the intent of the Specifications to cover all aspects of the project. Should there be some item or items not described in these Specifications which are required for the Work, those items and the furnishing of all labor, materials, and equipment necessary for completing the Work shall be considered incidental to the Work and no additional compensation will be provided.
- D. The Work includes the furnishing of all labor, equipment, tools, machinery, materials, and other items required for the construction of a complete project as specified. Equipment furnished shall be in safe operating condition and of adequate size, capacity, and condition for the performance of the Work. CONTRACTOR shall obtain all measurements necessary for the Work and shall be responsible for establishing all dimensions, levels, and layout of the Work, except where others are specifically identified in these Specifications as providing measurement, dimensions, levels, and layout of portions of the Work.
- 1.02 FORMAT
- A. The Contract Documents are defined in the Agreement. The terms apply to these Specifications as fully as though repeated herein.
- B. The format of these Specifications is based upon the CSI MASTERFORMAT, however differences in format and subject matter location do exist. It is the CONTRACTOR's sole responsibility to thoroughly read and understand these Specifications and request written clarification of those portions which the CONTRACTOR finds to be unclear.
- C. Division of the work made in these Contract Documents is for the purpose of specifying and describing work which is to be completed. There has been no attempt to make a classification according to trade or agreements, which may exist between CONTRACTOR, subcontractors, or

trade unions or other organizations. Such division and classification of the Work shall be the CONTRACTOR's sole responsibility.

#### 1.03 EXISTING SITE CONDITIONS AND USES

- A. Work included as part of this project is located at the Waukegan Manufactured Gas and Coke Plant Site, which is Operable Unit 2 of the Outboard Marine Corporation Superfund Site, in Waukegan, Illinois.
- B. The Site is owned by the City of Waukegan and by Larsen Marine. The majority of the remedial actions will be implemented on that portion of the Site that is owned by the City of Waukegan. The southeastern part of the Site is currently being used by Bombardier Recreational Products and a portion of the northern area of the Site is being used by Larsen Marine.
- C. Access to the area within the Construction Limits will be provided to CONTRACTOR. Existing Site conditions, existing gates in the fence, and construction limits are shown on the Drawings.

#### 1.04 SEQUENCE OF WORK

- A. Remedial action work shall be performed according to the following general sequence:
  - 1. Site preparation activities (i.e. installation of erosion control measures, installation of air emission and odor control measures, clearing and grubbing the work areas; abandoning wells, power and light poles in excavation areas; removing and/or constructing fences; preparing decontamination facilities; establishing roadways; preparing construction, support, and office facilities; providing traffic controls, security, and on-site health and safety requirements) shall be completed prior to excavation activities.
  - 2. The excavations north of the northern branch of the haul road shown on Drawing C-03 shall be completed during the beginning of the excavation work. Following completion of excavation, backfill and compaction of the northern excavations, and prior to placement of the soil cover, this area will be considered available for storage and stockpiling of materials to remain on site. This work may be performed prior to establishment of the northern branch of the haul road shown on Drawing C-03.
  - 3. The balance of the excavation work may proceed according to the CONTRACTOR's work sequencing program, subject to Part 1.04 B of this section.
- B. Sequencing requirements for work south of the existing south site fence:
  - 1. Removal and excavation of contaminated soil in the southern portion of the Site shall be conducted in such a way as to minimize disruption of property use by Bombardier Recreational Products (adjacent property owner). Backfilling and compaction in the southernmost excavation area shall proceed as soon as portions of the excavation are approved for backfilling.

2. Pavement restoration at the southernmost excavation shall proceed as early as backfill and weather conditions allow, in order to fully restore use of the access and parking areas of the Bombardier Recreational Products facility.

#### 1.05 MATERIALS HANDLING

- A. PRZ excavated materials shall be managed according to the Construction Quality Assurance Plan and as directed by the ENGINEER. Preliminary categorization of material will be based on visible characteristics of the material and will be performed by the ENGINEER. Based on visual categorization, ENGINEER will direct CONTACTOR to segregate excavated PRZ materials as follows:

1. Category 1 Stockpile - Category 1 material has the following visual characteristics (subject to adjustment during the work): soil that is saturated with tar, so that the soil is cohesive due to the tar; and soil that is completely saturated with oil.
2. Category 2 Temporary Accumulation Staging Pile (TASP) - Category 2 material has the following visual characteristics (subject to adjustment during the work): soil that appears to contain some tar, but is not saturated with tar; and oily soil that does not appear to be saturated with oil or has water mixed with the oil. TASPs shall be approximately 500 cubic yards in size.
3. Category 3 TASP - Category 3 soil is soil that visibly contains no tar and limited or no oil. The intent of Category 3 is to preserve clean overburden material for backfill of the excavations after verification that the excavation is complete. Category 3 soil will be staged in 2 classes of TASP (Category 3a and Category 3b) according to appearance. These TASPs are to be kept separate until testing has confirmed the status of the TASP. Category 3a includes soil that appears clean and soil that is merely discolored (black or dark brown), but does not have visual or olfactory evidence of contamination. Slag, coal fines, and small construction rubble are not considered contamination. Examples of clean overburden that would be considered Category 3a can be seen in the test trench logs (Appendix D of the Final Design Report). At TP-109, the CONTRACTOR will be expected to set aside the upper 3 to 3.5 feet as presumed Category 3a material. Similarly, the anticipated Category 3a material is the upper 1.5 to 2 feet at TP-127 and the material over the "tar" to a depth of approximately 2.5 to 3 feet below ground surface at TP-135.

Category 3b is soil that may appear to contain some oil, in contrast to Category 3a, but nevertheless is believed to have lower PAH concentrations than the cleanup levels. Category 3b soil is not to contain soil that is Category 1 or Category 2 soil. The following distinguishing points may help segregate between Category 2 and Category 3b soil (subject to adjustment during the work): (a) Category 3b soil may appear superficially oily, but on close inspection can be seen to have predominantly water, and only a limited amount of oil, (b) Category 3b soil may be discolored (black or dark brown), but does not produce a medium or heavy scum of oil when water is placed on a sample of soil (it may produce a medium to light sheen); (c) Category 3b soil does not contain any tar.

Separate TASPs of approximately 500 cubic yards in size shall be maintained to keep Category 3a soil separate from Category 3b soil until testing is complete and final status of

the TASP has been determined. Categories 3a and 3b together constitute Category 3, and all references to Category 3 soil apply to both Category 3a and Category 3b.

4. Large Debris Stockpile - CONTRACTOR shall clean, size, and segregate debris into management categories for on-site backfill, off-site recycling, or off-site disposal in accordance with Section 02197 and as directed by ENGINEER.
  5. Asbestos Containing Materials (ACM) – CONTRACTOR shall segregate debris identified as potential ACM and shall manage ACM in accordance with applicable State and Federal abatement regulations and in accordance with Section 02197.
- B. ARZ excavated materials shall be managed according to the Construction Quality Assurance Plan and as directed by the ENGINEER. CONTRACTOR shall segregate excavated ARZ materials as follows:
1. Category 2 TASP - CONTRACTOR shall place ARZ material in Category 2 TASPs in preparation for an analytical testing program conducted by the ENGINEER. TASPs shall be approximately 500 cubic yards in size.
  2. Large Debris Stockpile - CONTRACTOR shall clean, size, and segregate debris into management categories for on-site backfill, off-site recycling, or off-site disposal in accordance with Section 02197 and as directed by ENGINEER.
  3. ACM – CONTRACTOR shall segregate debris identified as potentially ACM and shall manage ACM in accordance with applicable State and Federal abatement regulations and in accordance with Section 02197.
- C. The DSS excavation includes all material located in the DSS stockpile as shown on the Drawings. As described in the Construction Quality Assurance Plan, DSS material is considered to be Category 2. DSS material shall be managed according to the Construction Quality Assurance Plan and as directed by the ENGINEER. CONTRACTOR shall segregate excavated DSS materials as follows:
1. Category 2 Stockpile - CONTRACTOR shall place excavated DSS material in stockpiles designated for off-site disposal at a RCRA Subtitle D landfill, or to the extent possible, CONTRACTOR shall load DSS materials directly from excavation equipment into trucks or other transport vehicles for off-site disposal.
  2. Large Debris Stockpile - CONTRACTOR shall clean, size, and segregate debris into management categories for on-site backfill, off-site recycling, or off-site disposal in accordance with Section 02197 and as directed by ENGINEER.
  3. ACM – CONTRACTOR shall segregate debris identified as potential ACM and shall manage ACM in accordance with applicable State and Federal abatement regulations and in accordance with Section 02197.
- D. CONTRACTOR shall manage IDW materials as follows:

1. IDW currently staged on site in 5-gallon plastic containers shall be thermally treated.
2. IDW currently staged on site, except material slated for thermal treatment, shall be disposed in a RCRA Subtitle D landfill.

**END OF SECTION 01110**

## SECTION 01311

### COORDINATION AND MEETINGS

#### PART 1: GENERAL

##### 1.01 COORDINATION

- A. CONTRACTOR shall be completely responsible for coordinating all aspects of the Work and for assuring that the Work of the various sections of the Specifications is completed in an orderly sequence incorporating all interdependent elements, whether specifically identified or not.
- B. CONTRACTOR shall be completely responsible for the division of the Work among the various trades and Subcontractors. The division and sections of the Specifications and the identifications on any Drawings shall not control CONTRACTOR in dividing the Work among the Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- C. CONTRACTOR shall be responsible for assuring that the work of one trade or Subcontractor does not impact the ability of another trade or Subcontractor to provide the completed work as specified. This includes, but is not limited to, providing all labor, equipment, and materials to protect the various portions of the Work during construction until the Work is completed. CONTRACTOR shall be solely responsible for providing completed work that meets these Specifications.
- D. CONTRACTOR shall coordinate the location, dimension, space requirements, and installation of work that is indicated diagrammatically on the Drawings or described in the Specifications. Spaces shall be utilized efficiently to maximize accessibility for other installations, maintenance, repairs, and operation.
- E. CONTRACTOR shall coordinate the submittals, correspondence, and attendance at meetings of all Subcontractors and suppliers.

##### 1.02 FIELD ENGINEERING

- A. ENGINEER will provide vertical control bench marks and horizontal control points near the Site to be used by the CONTRACTOR for vertical reference and documentation of the horizontal location of the Work.
- B. CONTRACTOR shall be responsible for providing field engineering services to establish elevations, lines, and levels required for the layout of the Work except in those cases where others are explicitly identified in these specifications as providing elevations, lines, or levels. Field engineering shall be performed by trained technicians using recognized engineering survey practices. All CONTRACTOR survey records shall be kept in a bound survey field book kept on Site specifically for this Work.



### 1.03 PRECONSTRUCTION CONFERENCE MEETING

- A. Prior to mobilization, ENGINEER will schedule a preconstruction conference to be held at the Site, which shall be attended by ENGINEER, Waukegan Coke Plant Group (WCP Group) Representative, U.S. EPA, CONTRACTOR, and others as appropriate. The meeting will be scheduled before commencement of the Work. The purpose of the meeting will be to ensure that all parties understand their responsibilities and the procedures that will be used to assure efficient completion of the Work.
- B. Agenda items may include:
  - 1. Designation of responsible personnel for all parties, lines of communication, and lines of authority
  - 2. Scope of work and the anticipated schedule of operations
  - 3. CONTRACTOR's proposed critical work sequencing
  - 4. Submittal and field test reporting procedures
  - 5. Status of CONTRACTOR's submittals
  - 6. General reporting
  - 7. Site safety and security procedures
  - 8. List of major subcontractors
  - 9. Procedures for processing change orders
  - 10. Use of premises including equipment and material storage
  - 11. Major equipment deliveries
  - 12. Housekeeping procedures

### 1.04 PROGRESS MEETINGS

- A. Monthly meetings will be scheduled by CONTRACTOR at a time mutually agreeable to ENGINEER, WCP Group Representative and U.S. EPA. The frequency of the progress meetings may be modified with the ENGINEER's permission in response to work progress. CONTRACTOR shall attend these meetings and shall coordinate and require the attendance of subcontractors whose work may be in progress at the time or whose presence may be required for any purpose. Scheduling of required attendees shall meet with the approval of ENGINEER. Topics discussed in meeting shall include but not be limited to:
  - 1. Progress
  - 2. Potential delays and method to reduce delays

3. Quality control and quality assurance issues
  4. Safety
  5. Project coordination, subcontractor coordination
  6. Resolution of problems or claims potentially affecting cost or completion
- B. Following each meeting, ENGINEER will prepare and distribute to WCP Group Representative and CONTRACTOR copies of the minutes of the meeting.
- 1.05 CONSTRUCTION MEETINGS
- A. CONTRACTOR shall schedule biweekly construction meetings that will be attended by CONTRACTOR, ENGINEER and WCP Group Representative to discuss construction progress and issues.
- 1.06 ADDITIONAL MEETINGS
- A. CONTRACTOR shall attend other additional meetings which may be reasonably requested by WCP Group Representative or ENGINEER to discuss unanticipated changes in the Work or conditions at the Site and which must be resolved before the Work can progress.
- 1.07 SUBMITTALS
- A. A copy of all survey notes shall be furnished to ENGINEER on a weekly basis, and a complete set of survey notes shall be furnished to ENGINEER upon demobilization from the Site.
- 1.08 BASIS FOR COMPENSATION
- A. Compensation for all Work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

**END OF SECTION 01311**

**SECTION 01330  
PROCEDURES FOR TECHNICAL SUBMITTALS**

**PART 1: GENERAL**

**1.01 GENERAL PROCEDURES**

- A. This section specifies the requirements for transmission of submittals from CONTRACTOR to ENGINEER and actions taken by ENGINEER regarding submittals.
- B. Submittals shall be identified with the project name (Waukegan Manufactured Gas and Coke Plant Site, Operable Unit 2 of the Outboard Marine Corporation Superfund Site, Soil Remedial Action), name of submittal, and reference to the section and page number of these Specifications in which the submittal was required.
- C. ENGINEER will accept submittals only from CONTRACTOR. Submittals from subcontractors, vendors, suppliers, or others will be returned without review or action.
- D. All submittals that are made that are not specifically required by the Specifications will be returned without action.
- E. All engineering or testing data, regardless of origin, shall be stamped with the approval of the CONTRACTOR. The CONTRACTOR's stamp of approval will be a representation to ENGINEER that the CONTRACTOR has assumed full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that he has reviewed or coordinated each submittal with the requirements of the Specifications.
- F. CONTRACTOR shall identify all variations or deviations from the Specifications. Identify alternative products that CONTRACTOR proposes to use. Identify system limitations which may be detrimental to successful performance of the completed Work.
- G. CONTRACTOR shall not proceed with any Work requiring a submittal, including resubmittal, to ENGINEER until the submittal has been returned to CONTRACTOR without a requirement for resubmittal.

**1.02 CORRESPONDENCE**

- A. Correspondence shall be addressed as follows:
  - Conestoga-Rovers & Associates
  - 8615 West Bryn Mawr Avenue
  - Chicago, IL 60631-3501
  - Attn: Mr. Walt Pochran
- B. A letter of transmittal shall accompany all submittals and shall be identified by the project name (Waukegan Manufactured Gas and Coke Plant Site, Operable Unit 2 of the Outboard Marine Corporation Superfund Site, Soil Remedial Action) and include name of the submittal, and section and page number of these Specifications in which the submittal was required. CONTRACTOR shall indicate the type or purpose of the submittal as more fully described

elsewhere in this section, and transmit the correct number of copies as described below for each type of submittal.

#### 1.03 ADMINISTRATIVE SUBMITTALS

- A. Procedures for administrative submittals (e.g., project schedules, progress reports, schedule of values, payment applications, changes, etc.) will be defined by ENGINEER and WCP Group Representative prior to the start of Work.
- B. CONTRACTOR shall submit an estimated progress schedule within 10 working days following the notice of award. ENGINEER will review this schedule with CONTRACTOR, and CONTRACTOR shall submit a finalized progress schedule that includes all changes necessary to meet the objectives of ENGINEER.
- C. The CONTRACTOR shall revise the finalized progress schedule from time to time, as may reasonably requested by ENGINEER, to reflect the current status and progress of the Work and the operations necessary to complete the Work as required.

#### 1.04 SUBMITTAL FOR INFORMATION OR DOCUMENTATION

- A. Submit one copy to ENGINEER and one copy to WCP Group Representative.
- B. Submittal shall be made at least 5 days before the subject of the submittal is to be incorporated into the Work.
- C. Submittal is for the purpose of formal verification that the subject of the submittal conforms to the requirements of the Specifications, for formal documentation of the Work, or both.
- D. No action is required by ENGINEER. ENGINEER will generally notify CONTRACTOR if deficiencies are identified; however, CONTRACTOR is solely responsible for ensuring that the subject of the submittal conforms to the requirements of the Specifications.

#### 1.05 SUBMITTAL FOR REVIEW AND COMMENT

- A. Submit two copies to ENGINEER and one copy to WCP Group Representative.
- B. Submittal shall be made at least 10 days before the subject of the submittal is to be incorporated into the Work. ENGINEER will respond within 5 days from receipt of submittal.
- C. Submittal is for the purpose of providing opportunity to ENGINEER for review and comment on the subject of the submittal.
- D. ENGINEER will respond to the submittal either with a list of comments or indicating no comments.
- E. If ENGINEER comments indicate a deficiency with respect to the requirement of the Specifications, CONTRACTOR shall amend the submittal and resubmit.
- F. CONTRACTOR shall remain solely responsible for ensuring that the subject of the submittal conforms to the requirements of the Specifications.

#### 1.06 SUBMITTAL FOR APPROVAL

- A. Submit two copies to ENGINEER and one copy to WCP Group Representative.
- B. Submittal shall be made at least 15 days before the subject of the submittal is to be incorporated into the Work. ENGINEER will respond within 7 days from receipt of submittal.
- C. Submittals shall be stamped with CONTRACTOR's approval. CONTRACTOR's stamp shall be a representation that CONTRACTOR has assumed full responsibility for determining the submittal requirements and verifying that the subject of the submittal conforms to the requirements of the Specifications. Submittals not bearing CONTRACTOR's stamp will be returned without review or action.
- D. ENGINEER will review, make notations as appropriate, and return submittals to CONTRACTOR. ENGINEER's notations and CONTRACTOR's required action are described below:
  - 1. NO EXCEPTIONS TAKEN. CONTRACTOR may proceed without further action.
  - 2. RECOMMENDED REVISIONS NOTED. CONTRACTOR shall review ENGINEER's notations and revise subject of submittal as required to conform to the requirements of the Specifications before proceeding with the Work. Resubmittal is not required.
  - 3. RESUBMIT. CONTRACTOR shall review ENGINEER's notations, revise subject of submittal as required to conform to the requirements of the Specifications, and resubmit.
  - 4. REVIEW COMPLETE, FURNISH FILE COPIES. CONTRACTOR shall furnish the requested number of copies and may proceed without further action.
- E. Each drawing submitted shall be black line on white background or blue line on white background. Print size shall not exceed 24 inches by 36 inches.
- F. Each drawing submitted shall be clearly marked with the name of the project, the specification title, the specification number, and the CONTRACTOR's name.

#### 1.07 LIST OF TECHNICAL SUBMITTALS

- A. The following table summarizes the technical submittals required by the Specifications:

Specification Section	Technical Submittal
01311	A. Survey notes
01501	A. Project Health and Safety Plan*
	B. List of personnel for work and documentation of 40-hour safety training
01503	A. Contingency Plan*
01505	A. Project Contacts
	B. Permits* (if any)
01571	A. Surface Water Management and Erosion Control Plan*
01710	A. Odor and Air Emission Control Plan*
	B. Records of Air Monitoring

Specification Section	Technical Submittal
01720	A. Decontamination Pad Plan*
	B. Decontamination Procedures for Equipment*
02120	A. Proposed Disposal and Recycling Facility Information (Letters of Commitment) – submit with bid
	B. Documentation of weight and acceptance of materials at disposal and recycling facilities
	C. Documentation of payment to disposal and recycling facilities
02144	A. Wastewater Collection, Treatment, Discharge, and Monitoring Plan*
	B. Records of Wastewater Testing Results and Discharge Information
02300	A. Earthwork Sequencing Plan* Including Remediation Site Plan with haul road detail
	B. Borrow Soil Information
02528	A. Well Abandonment Logs
02630	A. Technical data and product information for storm drainage materials
02745	A. Documentation of materials and mix design for bituminous concrete pavement
02945	A. Three tallgrass establishment project references
02946	A. Three tallgrass establishment project references
	B. Herbicide or manual treatment plan

\* Pre-mobilization submittal: these plans must be approved prior to mobilization for field work.

#### 1.08 REVIEW OF SUBMITTALS

- A. The ENGINEER's review of submittals will cover only general conformity of the data to the Specifications. The ENGINEER's review does not indicate a thorough review of all dimensions, quantities, and details of the equipment, material, device, or item indicated or the accuracy of the information or documentation submitted; nor shall review or approval by the ENGINEER or WCP Group Representative be construed as relieving the CONTRACTOR from any and all responsibility for errors or deviations from the requirements of the Specifications.
- B. All of the submittals are subject to the review and approval by the U.S. EPA. Pre-mobilization plan submittals require U.S. EPA review and approval prior to mobilization by CONTRACTOR. CONTRACTOR shall allow a minimum of 30 days for U.S. EPA initial review and comment.

#### 1.09 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

**END OF SECTION 01330**

## SECTION 01500

### CONSTRUCTION FACILITIES AND SITE CONTROL

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Provide and maintain full Site control security for the entire duration of the Work
  - 2. Provide field office space for ENGINEER, U.S. EPA and CONTRACTOR
  - 3. Provide field storage space for equipment
  - 4. Provide potable water
  - 5. Provide sanitary facilities
  - 6. Provide electricity
  - 7. Provide telephone service
  - 8. Provide traffic control

##### 1.02 REFERENCES

- A. Security at the Site will be conducted in accordance with all federal, state, and local safety regulations, and the Site security plan prepared by ENGINEER.
- B. Related Sections:
  - 1. Section 01710 Emission Controls and Air Monitoring
  - 2. Section 01720 Equipment Decontamination

##### 1.03 CONTRACTOR USE OF PREMISES

- A. Definition of Site and construction limits: The Construction Limits are defined as indicated on Drawing C-03. CONTRACTOR shall limit operations, including material and equipment storage, to the Construction Limits that are shown on the Drawings.
- B. Truck Traffic Restriction: CONTRACTOR's operations of trucks on public roads shall be limited to between the hours of 6:00 a.m. and 9:00 p.m.



- C. Protection and Repair of Existing Facilities and Utilities: CONTRACTOR shall perform operations carefully and in such a manner as to protect existing structures, Underground Facilities, and Utilities, except those indicated in writing by ENGINEER for removal. Obstructions not shown on the Drawings may exist and shall be exposed by CONTRACTOR without damage. CONTRACTOR shall be responsible for damage to existing structures, Underground Facilities, and Utilities resulting from CONTRACTOR's operations, and shall repair or replace damaged items to ENGINEER's satisfaction.
- D. Unfavorable Construction Conditions: When unfavorable weather, or other unsuitable construction conditions exist, CONTRACTOR shall confine operations to work which will not be adversely affected by such conditions. No portion of the Work shall be constructed under conditions which would adversely affect the quality of the Work, unless special means or precautions are taken to perform the Work in a proper and satisfactory manner.
- E. Survey Markers: CONTRACTOR shall conduct operations so as to preserve benchmarks, survey reference points, and stakes existing or established by ENGINEER for the construction. CONTRACTOR will be charged the expense of repairing or replacing survey markers and shall be responsible for mistakes or lost time that results due to damage or destruction of survey markers due to CONTRACTOR's operations.

#### 1.04 UTILITIES

##### A. Water

Potable water is not available at the Site. CONTRACTOR shall make all arrangements necessary to provide, during construction, water for potable consumption and construction purposes. CONTRACTOR may not use Site groundwater or surface water/Lake Michigan for construction or consumption purposes. Supply bottled water to all field offices, including Engineer and U.S. EPA.

##### B. Sanitary Facilities

CONTRACTOR shall provide sanitary facilities for use by CONTRACTOR's employees, subcontractors, suppliers, ENGINEER, U. S. EPA, and all other persons working on the Site. Sanitary facilities shall be provided with lockable doors when in use, shall include a hand-wash station, shall be routinely emptied and sanitized frequently, and shall at all times be maintained in a clean and usable condition. Sanitary facilities shall be maintained until project completion.

##### C. Electricity

CONTRACTOR shall furnish electric power for trailers, storage areas, air monitoring stations, and as necessary for construction of the Work. CONTRACTOR shall coordinate with local electric utility for the installation of a temporary electric service. CONTRACTOR shall consider all electrical needs of ENGINEER, U.S. EPA, CONTRACTOR, and all other persons working on the Site when requesting service to ensure adequate service is provided.

D. Telephone

CONTRACTOR shall arrange for and furnish telephone service throughout the project. CONTRACTOR shall provide ENGINEER and U.S. EPA with two separate telephone service lines and numbers. Each service shall be capable of sending data transmission related to faxes and computer internet service. Long distance fees for each line shall be paid by the user.

1.05 FIELD OFFICES

- A. CONTRACTOR shall furnish and maintain for ENGINEER, U.S. EPA and CONTRACTOR all weather field offices at the Site until the project is completed. Field office shall be kept locked and secure at all times. CONTRACTOR shall provide trash facilities and regular trash removal for the offices.
- B. Each party shall have their own separate office trailer of reasonable size (minimum of 8 ft wide by 26 ft long). Each space shall have a minimum of two windows capable of being opened and locked. The spaces shall be furnished with 60-inch by 36-inch table surface and two chairs. Each party shall be furnished with at least three keys to their respective field office. Each space shall have separate lockable access.
- C. Field offices shall each have heating and air conditioning sufficient to maintain office temperature between 68 and 78 degrees Fahrenheit.
- D. Field offices shall remain the property of CONTRACTOR and shall be removed from the Site at the project completion.
- E. Field offices shall be supplied with appropriate telephone and electrical service to support data transmission (faxes and e-mail) and recharging of monitoring and testing equipment. CONTRACTOR shall provide ENGINEER and U.S. EPA with a fax machine and a copy machine.

1.06 DECONTAMINATION FACILITIES

- A. Before excavation can begin, CONTRACTOR shall delineate decontamination zone and exclusion zones on the Site.
- B. CONTRACTOR shall supply decontamination equipment and construct decontamination facilities according to Section 01720 of the Specifications. All personnel and equipment shall be decontaminated after working with contaminated material and prior to entering clean areas.

1.07 FIELD STORAGE

- A. Field storage space shall be equipped to meet the needs of CONTRACTOR.

1.08 CLEANING

- A. CONTRACTOR shall clean the working area each day and shall remove all trash and waste materials, and shall maintain the Site in a neat and orderly condition throughout the construction

period.

- B. CONTRACTOR shall daily, or more often as it becomes apparent, pick up all garbage, litter, debris, and other materials attributable to the Work or the activities of CONTRACTOR's employees, Subcontractors, and suppliers that accumulates on property in the vicinity of the Site.
- C. CONTRACTOR shall weekly, or more often as necessary, clean ENGINEER and U.S. EPA field offices.

#### 1.09 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

### PART 2: PRODUCTS [NOT USED]

### PART 3: EXECUTION

#### 3.01 CONSTRUCTION FACILITIES COORDINATION

- A. CONTRACTOR shall be responsible for coordination and setup including but not limited to all construction facilities called for in this section of the Specifications.

#### 3.02 SITE ACCESS

- A. CONTRACTOR shall control access to the Site and coordinate work and deliveries through designated gates in the perimeter fence.
- B. The entire Site shall be available at all times (24 hours per day) for access by ENGINEER, WCP Group Representative, U.S. EPA and any other persons designated by ENGINEER. CONTRACTOR shall furnish ENGINEER and U.S. EPA with keys to all locks required to access the Site.
- C. All persons entering the Site shall provide proper identification.
- D. All persons entering the Site shall sign in upon entering and sign out upon leaving.
- E. A log shall be maintained by CONTRACTOR with all persons entering and leaving the Site including vehicles. Separate logs shall be maintained for visitors and CONTRACTOR employees.
- F. All persons entering the Site shall meet the requirements of the Contractor's Health and Safety Plan, including compliance with all signs and barricades and training requirements for admittance or work at the Site.

### 3.03 SITE SECURITY

- A. The Contractor shall be solely responsible for providing for the security of all work areas inside the Construction Limits shown on Drawing C-03 on a 24-hours per day, 7-days per week basis for the full duration of the Work.

### 3.04 ROADS/DUST CONTROL

- A. CONTRACTOR shall construct and maintain haul roads to provide access to and from the Site and all affected adjacent facilities for the entire duration of the construction. Roads shall be passable for their intended use at all times in all weather conditions and shall be maintained in a graded and rut-free condition.
- B. Public roads shall be cleaned and maintained as necessary and at ENGINEER's request to minimize tracking of soil away from the Site.
- C. CONTRACTOR shall provide all equipment and materials necessary for the control of dust on access roads arising during the performance of the Work. When requested by ENGINEER, or at other times as necessary, CONTRACTOR shall take measures to reduce dust. (See Section 01710 of the Specifications).

### 3.05 TRAFFIC CONTROL

- A. CONTRACTOR shall furnish and maintain all warning lights, barricades, informational signs, and watchmen as needed for the execution of the Work as required by the Contract Documents, Laws and Regulations, for the protection of persons and property, and control of traffic.
- B. Barricades, warning lights, and traffic control signage within public streets and roadways shall, at a minimum, meet the technical requirements of the Institute of Transportation Engineers or similar publication. CONTRACTOR shall coordinate all use of barricades, warning lights, and traffic control signage within public streets and coordinate with the unit of government responsible for the public street or roadway, and shall comply with the unit of government's rules, policies, and requirements.

**END OF SECTION 01500**

## SECTION 01501

### ON-SITE HEALTH AND SAFETY REQUIREMENTS

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. In accordance with generally accepted construction practices, the CONTRACTOR shall be solely and completely responsible for job site conditions and safety procedures and programs, including safety of all persons and property on those portions of the Site affected by or used by CONTRACTOR, CONTRACTOR's employees, subcontractors, agents, and others during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. Observation of the Work and CONTRACTOR's performance by the WCP Group Representative and ENGINEER is not intended to include review of the adequacy of the CONTRACTOR's safety procedures and programs on or near the construction site. The CONTRACTOR is solely responsible for the protection of property and the safety and health of its employees, subcontractors, suppliers, agents and others on or near the Site.
- B. The Site is the location of a former wood treating plant, manufactured gas plant facility, and coke production facility. Former property use resulted in releases of coal tar products and gas purification residuals to the environment impacting soil and groundwater at the Site. The ROD cleanup standards are for PAHs and arsenic. In addition, the soil contamination includes (but may not be limited to) volatile organic compounds, semivolatile organic compounds and metals, and polychlorinated biphenols have been detected in some areas. Free-phase tar and oil or soil saturated with tar or oil will be encountered during the Work. Groundwater contaminants include ammonia, arsenic, phenols, benzene, and other organic and inorganic substances. The anticipated nature of the Site is described in the remedial design submittals and their referenced documents.
- C. Construction and remedial action activities at the Site may place CONTRACTOR's personnel and other personnel at the Site in potentially hazardous situations due to exposure to hazardous substances. The CONTRACTOR must control access to the Site, practices during the Work, and emissions during the Work to minimize the potential hazard to the public.
- D. CONTRACTOR is responsible for implementation and enforcement of safe work practices including, but not limited to, protection of personnel as appropriate from exposure to contaminated soil and groundwater; use of trenching, sheeting, shoring, fencing, and scaffolding; materials handling; work around surface water; operation of equipment; and safety of public during progress of Work.
- E. Related Sections:
  - 1. Section 01503 Contingency Plan
  - 2. Section 01720 Equipment Decontamination

## 1.02 QUALITY ASSURANCE

### A. Regulatory Requirements:

1. CONTRACTOR shall plan for and ensure personnel comply with basic provisions of the Occupational Safety and Health Administration (OSHA) Safety and Health Standards (29 CFR 1910) and General Construction Standards (29 CFR 1926) as appropriate.
2. Comply with applicable laws and regulations of any public body having jurisdiction for safety of persons or property.

## 1.03 OPERATIONS AND EQUIPMENT SAFETY

### A. CONTRACTOR's responsibilities include, but are not limited to the following:

1. CONTRACTOR shall be responsible for furnishing CONTRACTOR's employees, as well as any subcontractor's and supplier's employees, with all safety equipment and other protection devices (e.g., hard hats, eye protection, respiratory protection equipment, etc.) needed to comply with Laws and Regulations or accepted safety practices. CONTRACTOR shall also be responsible for furnishing all visitors to the Site with all such safety equipment.
2. CONTRACTOR shall make all persons on the Site familiar with the safety precautions appropriate to the construction zones and refuse entry by any person not authorized by CONTRACTOR or WCP Group.
3. The CONTRACTOR has responsibility for the design and safety of excavations. ENGINEER and the WCP Group will not provide any excavation designs, nor should excavation designs be presumed to be contained in the Contract Documents. ENGINEER and WCP Group will not assist CONTRACTOR in classifying soils for excavation stability purposes or interpreting applicable regulations. CONTRACTOR is responsible for providing a Competent Person, as defined by OSHA, to inspect all excavations daily.
4. CONTRACTOR shall be responsible for any safety violation and/or fine that may occur because of any neglect by CONTRACTOR, CONTRACTOR's employees, CONTRACTOR's subcontractors, or any third party under CONTRACTOR's supervision or direction.
5. CONTRACTOR shall provide safe access to all portions of the Work for use by ENGINEER or WCP Group Representative in the performance of their observation duties. Said access shall conform to Laws and Regulations and to all requirements of any regulatory agency or agencies who claim jurisdiction over the safety of the work area. If ENGINEER or WCP Group Representatives are unable to observe CONTRACTOR's work due to unsafe conditions, ENGINEER's recommendation for payment or WCP Group's payment for such work may be withheld until work has been determined to be in compliance with these Specifications.

6. CONTRACTOR's duties and responsibilities for safety in connection with the Work shall continue until such time as Work is complete and ENGINEER has issued notice to CONTRACTOR that Work is complete.

#### 1.04 HEALTH AND SAFETY

- A. CONTRACTOR is responsible for implementation and enforcement of health and safety requirements and shall take necessary precautions and provide protection for following:
  1. Personnel working on or visiting the Site, irrespective of employer.
  2. Work and materials or equipment to be incorporated in work area on or off site.
  3. Other property at or adjacent to the Site.
  4. Public exposed to job related operations or potential release of toxic or hazardous materials.
- B. CONTRACTOR shall prepare a site-specific health and safety plan (HASP). If CONTRACTOR does not have capability to prepare the HASP, CONTRACTOR shall employ consultants with appropriate capability. CONTRACTOR is solely responsible for adequacy of the HASP's preparation, monitoring, management, and enforcement. At a minimum, the CONTRACTOR's HASP shall meet the regulatory requirements set forth by OSHA, specifically those set forth in the Code of Federal Regulations (CFR) at 29 CFR Parts 1910 and 1926, in particular 1910.120 (Hazardous Waste Operations and Emergency Response). Specific topics that shall be addressed in the CONTRACTOR's HASP include at a minimum, the following:
  1. Worker medical surveillance;
  2. Worker training;
  3. A detailed description of the planned movement of labor, equipment and materials from and between work areas as work progresses, including measures to be employed to prevent recontamination of previously cleaned areas and contamination of areas that do not now contain hazardous substances;
  4. Personal hygiene and personnel decontamination procedures;
  5. A detailed description of the personnel decontamination facilities to be employed including the planned phasing of decontamination facilities between work areas as the work progresses and the methods to be used to collect, store, treat, and ultimately dispose of personnel decontamination waters and wastes;
  6. A detailed description of the vehicles and equipment decontamination area (See Section 01720);
  7. Personal protective equipment types to be used and conditions for use;
  8. Respirator protection program and procedures;



9. Personnel and ambient air monitoring;
10. Dust and particulate emission control;
11. Emergency and first aid equipment and supply;
12. Monitoring and mitigation of worker heat and cold stress;
13. The types of materials and substances likely to be encountered in the course of the Work;  
and
14. Site security, Site access, and Site control.

- C. CONTRACTOR's HASP shall designate a qualified individual to act as CONTRACTOR's Site Safety Officer for purposes of assuring compliance by all persons with CONTRACTOR's HASP. CONTRACTOR's Site Safety Officer shall be present on the Site during all activities that could potentially result in exposure to contaminated soil or groundwater, specifically including but not limited to, excavation, transportation, and backfilling. At other times of routine construction, CONTRACTOR shall determine the need for the presence of the designated Site Safety Officer. However, the Site Safety Officer (or a designated alternate(s)) shall be available by telephone continuously during the Work, and shall be available to respond to the Site within two hours at any time following request by CONTRACTOR, WCP Group or ENGINEER at no additional cost to WCP Group.
- D. At a minimum, CONTRACTOR shall monitor air quality using organic vapor and particulate monitoring equipment.
- E. If the WCP Group contracts with others for work on site, CONTRACTOR shall amend the HASP to include provisions for work of others. CONTRACTOR shall also manage, enforce, and monitor health and safety activities of other contractors during duration of other contractors' work.
- F. ENGINEER has prepared a HASP for reference by employees of ENGINEER working on site. CONTRACTOR may request copy of ENGINEER's HASP for reference.

#### 1.05 SUBMITTALS

- A. CONTRACTOR shall submit copies of HASP to WCP Group Representative and ENGINEER prior to mobilization in accordance with the submitted schedule (Section 01330). ENGINEER may comment on the HASP, and CONTRACTOR must address the comments prior to mobilization. CONTRACTOR shall not commence construction activities until receipt of the CONTRACTOR's HASP and responses to comments are noted by ENGINEER.
  1. Submittal of CONTRACTOR's HASP to ENGINEER is to inform ENGINEER and WCP Group Representative so they can comply with HASP during performance of their on-site responsibilities as described in CONTRACT DOCUMENTS.

2. Submittal of CONTRACTOR's HASP shall neither impose on ENGINEER responsibility for adequacy of HASP nor relieve CONTRACTOR from full responsibility therefore.
  3. ENGINEER's review will be only to see that HASP meets the minimum requirements set forth in these Specifications.
- B. Submit with the HASP a list of personnel to perform work on site and documentation of training of personnel (40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certificate and most recent 8-hour refresher) proof of medical surveillance, and respirator fit-test records.
1. All personnel operating equipment to be used for contaminated materials excavation shall be 40-hour safety trained.
  2. Personnel who supervise on-site work and have the potential to come in contact with contaminated material shall be 40-hour safety trained. This does not include personnel whose sole responsibility is the transport of contaminated materials off site. Such personnel shall remain in vehicle or "clean" areas at all times until vehicle loading is complete.

#### 1.06 EMERGENCIES

- A. In emergencies affecting the safety or protection of persons, the Work, or any property adjacent to the Work, CONTRACTOR, without special instruction from WCP Group or ENGINEER, is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been created by such emergency. If WCP Group Representative or ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Change Order will be issued to document the consequences of such action.
- B. In the event CONTRACTOR identifies unexpected, hazardous, or toxic materials/liquids; drums, containers, or tanks; or any similar material or unit of concern, CONTRACTOR shall implement CONTRACTOR's Contingency Plan (See Section 01503) and applicable provisions of CONTRACTOR's HASP.

#### 1.07 HAZARD COMMUNICATION PROGRAMS

- A. CONTRACTOR shall be responsible for coordinating any exchange of Material Safety Data Sheets or other hazard communication information required to be made available to or exchanged between employers at the Site in accordance with Laws and Regulations. All workers shall have access to all Material Safety Data Sheets and other hazard communication information.

#### 1.08 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

**END OF SECTION 01501**

## SECTION 01503

### CONTINGENCY PLAN

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to (1) prepare a Contingency Plan and (2) be prepared to implement the Contingency Plan during the Work.
- C. The Contingency Plan shall focus on unexpected events that would primarily affect the performance of the Work (rather than primarily affect worker safety). The Contingency Plan shall complement the other contingency topics that are addressed separately in CONTRACTOR's HASP, which focus on unexpected events that could primarily affect worker safety.
- D. The Contingency Plan shall include (but not be limited to) measures to assess and address the following potential incidents:
  - 1. Flood, wet weather, and or unusually high groundwater elevations and resulting failure (or *expected failure*) of runoff diversion systems.
  - 2. Discovery of drums, underground storage tanks, or other unidentified containers during excavation.
  - 3. Significant accumulation of free oil during excavation.
  - 4. *Dewatering activities such as required by utility construction below groundwater.*
  - 5. Severe weather, such as severe electrical storms, high wind, tornado, etc.
- E. The Contingency Plan shall not include topics already addressed in the HASP. Examples of HASP contingency topics that shall not be duplicated in the Contingency Plan include (but may not be limited to):
  - 1. Fires or Explosions.
  - 2. Release of organic vapors or particulates above worker safety action levels.
  - 3. Accidents involving personal injury or a medical emergency.
  - 4. Biological hazards.

## 1.02 SUBMITTALS

### A. Contingency Plan

1. CONTRACTOR shall submit a Contingency Plan that addresses the responses to potential incidents at the Site in accordance with the schedule defined in Section 01330.
2. The text of the Contingency Plan shall be submitted as a Microsoft Word file and figures shall be submitted as Autocad 2002 Release drawings.

## 1.03 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

## **PART 2: PRODUCTS [NOT USED]**

## **PART 3: EXECUTION**

### 3.01 GENERAL

- A. CONTRACTOR shall prepare a Contingency Plan for incidents that may occur during the Work, and be prepared to provide the initial responses during the Work that are outlined in the Contingency Plan.
- B. CONTRACTOR shall notify the ENGINEER and any other applicable regulatory or emergency response authority immediately upon occurrence of any of the following: flood, wet weather, accident, drums, fire, waste release, or significant accumulation of free oil during excavation.
- C. CONTRACTOR shall coordinate contingency efforts with any applicable regulatory or emergency response authority(s).
- D. In general, CONTRACTOR's initial contingency responses shall be to assess and stabilize the situation (if it can be done safely) until further plans of action can be developed with ENGINEER and any applicable regulatory or emergency response authority(s).

**END OF SECTION 01503**

## SECTION 01505

### MOBILIZATION/DEMOLITION

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs, the General Requirements set forth in Division 1 of these Specifications.
- B. The work covered by this section of the Specifications consists of, but is not limited to furnishing all supervision, labor, equipment, and materials and performing all operations necessary to:
  - 1. Move (mobilize) personnel, equipment, supplies, and incidentals to the Site;
  - 2. Perform all work that must be performed before beginning work on the various items described elsewhere in these Specifications;
  - 3. Prepare a site-specific HASP and train personnel to meet the requirements of Section 01501;
  - 4. Furnish all submittals described in these Specifications;
  - 5. Furnish all insurance required specifically for this project;
  - 6. Provide performance and payment bonds for the Work;
  - 7. Obtain all permits required specifically for this Work;
  - 8. Perform project coordination, provide updates, and attend project conferences and meetings;
  - 9. Provide field engineering services;
  - 10. Provide diversion and storm drainage improvements;
  - 11. Remove power and light poles in excavation areas and disconnect or reroute electrical service to them;
  - 12. Construct and maintain haul roads through completion of backfill activities;
  - 13. Provide and maintain temporary utilities through completion of backfill activities;
  - 14. Provide and maintain traffic controls through completion of backfill activities;
  - 15. Provide and maintain security, fencing, and Site controls through completion of backfill activities;

16. Provide and maintain field offices and storage trailers through completion of backfill activities;
  17. Provide and maintain on-site health and safety requirements through completion of backfill activities;
  18. Maintain a clean and orderly work site on a daily basis throughout the duration of the project;
  19. Remove (demobilize) all equipment, surplus materials, fencing, temporary utilities, etc. from the project site after it is no longer necessary;
  20. Clean up the area within the construction limits at the completion of the Work;
- C. The work covered by this section also includes repairing any damage to existing features that are specified to remain at the completion of the Work such as asphalt roads and fences, etc.

#### 1.02 SUBMITTALS

- A. All submittals described in this section shall be transmitted in accordance with Section 01330 of these Specifications.
- B. The following submittals are required as part of CONTRACTOR's mobilization, and shall be submitted within five (5) days of being given Notice to Proceed.

##### 1. Project Contacts

- a. CONTRACTOR shall submit to ENGINEER a list of technical personnel available for ongoing technical support and who are familiar with the Work and are responsible for its completion.
- b. The list should include at least two persons and should include names, functional titles, mailing addresses, delivery addresses, and phone numbers.
- c. At least two phone numbers shall be furnished which will provide 24-hour answering by a competent technical representative of CONTRACTOR in the event of an unanticipated condition requiring immediate attention. At least one person should be available at all times for immediate response to the Site within 2 hours of being called. This person shall have authority to make field decisions for CONTRACTOR.

##### 2. Permits

CONTRACTOR shall submit copies of any required permits to ENGINEER prior to mobilization to the Site.

#### 1.03 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

**END OF SECTION 01505**

## **SECTION 01571**

### **SOIL EROSION AND SEDIMENTATION CONTROL**

#### **PART 1: GENERAL**

##### **1.01 DESCRIPTION**

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Prepare a Surface Water Management and Erosion Control Plan.
  - 2. Install erosion and runoff control devices and materials at locations as shown on Drawing C-03 and as directed by ENGINEER where soil erosion and sediment transport from the Site may occur due to CONTRACTOR's activities.
  - 3. Install temporary erosion and runoff control devices during the progress of the Work and maintain them until permanent erosion control (tallgrass establishment, aggregate surfacing, etc) has been established.
- C. Related Sections:
  - 1. Section 02630 Storm Drainage Repair and Replacement
  - 2. Section 02945 Tallgrass Establishment

##### **1.02 SUBMITTALS**

- A. CONTRACTOR shall submit copies of the Surface Water Management and Erosion Control Plan to WCP Group Representative and ENGINEER prior to mobilization.

##### **1.03 BASIS FOR COMPENSATION**

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### **PART 2: PRODUCTS**



**2.01 SILT FENCE**

- A. Silt fence shall meet the material requirements of IDOT Section 1080.01, for temporary erosion control.

**2.02 STRAW BALES**

- A. Straw bales shall meet the material requirements of IDOT Section 1081.15 for temporary erosion control.

**PART 3: EXECUTION**

**3.01 TEMPORARY EROSION CONTROL**

- A. Furnish, install, and maintain temporary erosion controls noted on Drawing C-03 and as necessary to prevent the erosion and transport of soils, silt, mud, and debris off site or to other areas of the Site where damage could result or that may otherwise be required by Laws and Regulations.
- B. Temporary erosion controls may include, but are not limited to, silt fences, straw bales, geotextiles, terracing, riprap, temporary drainage piping, sedimentation basins, organic erosion control blankets, turf reinforcement mats, vegetative cover, and other means necessary to control erosion.
- C. CONTRACTOR shall schedule operations to minimize the potential for erosion by minimizing the disturbed areas at any given time and completing operations and restoring disturbed areas in the shortest time possible.
- D. CONTRACTOR's operations must not allow soil and debris accumulation in low areas, storm sewers, roadways, gutters, ditches, or other areas where in the ENGINEER's determination it is undesirable, CONTRACTOR shall remove the accumulation and restore the area to its original condition without additional compensation.
- E. Remove and dispose of all temporary erosion controls when vegetation has been reestablished and has eliminated the possibility of sediment transport off site.

**3.02 RUNON AND RUNOFF CONTROLS**

- A. CONTRACTOR shall furnish, install and maintain temporary runon controls necessary to prevent offsite surface water from running onto contaminated materials and excavations on the Site.
- B. CONTRACTOR shall furnish, install, and maintain temporary surface water controls as necessary to minimize onsite water from contacting potentially contaminated material.
- C. CONTRACTOR shall furnish, install, and maintain temporary surface water controls as necessary to prevent runoff from open excavations, stockpiles, and contaminated areas.

- D. Temporary runoff controls may include, but are not limited to, ditching, terracing, riprap, temporary drainage piping and any other construction required to control and divert surface water on site.
- E. Erosion control meeting requirements of Part 3.01 of this section shall be provided at the point where all runoff control drainageways flow out of the work area.

3.03 MAINTENANCE

- A. CONTRACTOR shall inspect erosion control measures weekly and after each rain or other event that might stress the erosion controls. CONTRACTOR shall repair and reestablish silt fence and other erosion control measures in damaged areas.

**END OF SECTION 01571**

## SECTION 01710

### EMISSION CONTROLS AND AIR MONITORING

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Control odors and air emissions while working with contaminated materials, including (but not limited to) earthwork and water treatment activities.
  - 2. Maintain and adjust odor and air emission control efforts as necessary to limit visible dust, dust above control limits of 5 mg/m<sup>3</sup> in the work zone and 150 ug/m<sup>3</sup> at the site perimeter, complaints of odors, or as directed by the ENGINEER.
  - 3. Conduct any additional monitoring deemed necessary by the CONTRACTOR.
- C. Related Sections:
  - 1. Section 01503 Contingency Plan
  - 2. Section 02144 Wastewater Treatment, Discharge, and Monitoring
  - 3. Section 02300 Excavation, Staging, Backfill, and Compaction

##### 1.02 REFERENCES

- A. Construction Quality Assurance Plan, Performance Standard Verification Plan, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. Barr, 2003.
- B. CONTRACTOR's site-specific HASP.

##### 1.03 SUBMITTALS

- A. Odor and Air Emission Control Plan
  - 1. CONTRACTOR shall submit a plan describing the procedures that will be used to control odors and air emissions during the Work.
  - 2. The plan shall identify equipment, materials, standard operating procedures, and contingency procedures for control of odor and air emissions.

3. The text of the odor and air emission control plan shall be submitted as a Microsoft Word file and figures shall be submitted as Autocad Release 2002 drawings.

B. Records of Air and Meteorological Monitoring

1. CONTRACTOR shall submit the results from any air or meteorological monitoring conducted by CONTRACTOR that will be used for odor or emission control decisions.

1.04 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

## PART 2: PRODUCTS

- 2.01 CONTRACTOR shall submit manufacturer's information (e.g., material safety data sheet) on materials or products to be used for odor and air emission control. The information shall be submitted in the odor and air emission control plan described in paragraph 1.03A.

## PART 3: EXECUTION

3.01 AIR EMISSION AND ODOR CONTROL

A. Odor and Air Emission Sources

1. CONTRACTOR shall conduct air emission and odor control efforts in accordance with CONTRACTOR's approved odor and air emission control plan.
2. CONTRACTOR shall immediately implement dust control measures at any location in the event dust emissions are visible in that area.
3. CONTRACTOR shall keep construction roads wet, but not muddy, to minimize dust generation.
4. CONTRACTOR shall water open excavations as necessary to control dust emissions.
5. CONTRACTOR shall employ AC645 foam from Rusmar Incorporated, or equivalent, as approved by ENGINEER, for control of odor and emission sources.
6. CONTRACTOR shall adjust odor and emissions source control efforts as necessary due to changing weather conditions.
7. CONTRACTOR shall control air emissions from on-site sources (open excavations, contaminated soil stockpiles, etc.) at all times during the Work as necessary to protect on-site workers in accordance with the site-specific HASP and to maintain acceptable on-site air quality.

8. CONTRACTOR shall cover contaminated soil stockpiles that will be inactive for longer than 24 hours.
9. CONTRACTOR shall minimize the area of open excavation to the extent practicable.
10. CONTRACTOR's source control measures shall not adversely impact other aspects of the Work, including the performance of water treatment and earthwork compaction activities.

**B. Ambient Air Quality**

1. CONTRACTOR shall address on-site ambient air quality issues and associated potential exposure of on-site workers to airborne contaminants in accordance with CONTRACTOR's HASP for the Site (e.g., CONTRACTOR shall monitor on-site air quality for worker exposure purposes, control emission sources, provide worker respiratory protection, and/or move workers from on-site areas with unfavorable air quality as necessary). If necessary, WCP Group Representative may direct CONTRACTOR to stop work at the Site until the cause(s) of the unfavorable ambient air conditions are addressed.
2. CONTRACTOR shall control its work practices and activities so as not to cause (1) off-site nuisance odors, (2) significant deterioration of air quality at the construction limits shown on Drawing C-03, or (3) particulates, as measured by a Mini-Ram or equivalent, exceeding  $5 \text{ mg/m}^3$  in the work zone and  $150 \mu\text{g/m}^3$  at the Site perimeter. Should these criteria be exceeded, CONTRACTOR will immediately control work practices and activities and/or apply water spray or foam to work and haul road areas to control dust and odors within the specified limits. CONTRACTOR will not be required to achieve better air quality than reported at the upwind side of the Site.
3. In the event a complaint is received about nuisance odors due to CONTRACTOR's work at the Site, CONTRACTOR shall be responsive and address the source(s) of nuisance odors in accordance with CONTRACTOR's odor and air emission control plan.
4. CONTRACTOR's activities shall not cause visible emissions past the Site perimeter.

**3.02 AIR MONITORING**

- A. CONTRACTOR shall conduct any necessary air quality monitoring in accordance with CONTRACTOR's approved odor and air emission control plan and CONTRACTOR's Project Health and Safety Plan. At a minimum, CONTRACTOR shall monitor for organic vapors and particulates in the work zone on a continuous basis, or as otherwise approved by the ENGINEER. CONTRACTOR shall also monitor for organic vapors and particulates at the work zone perimeter at the direction of the ENGINEER.
- B. ENGINEER will monitor air quality in accordance with the Air Monitoring Plan for the Site. ENGINEER's monitoring is to include upwind and downwind perimeter monitoring for dust, and may include monitoring for volatile organic compounds, odors and other parameters at ENGINEER's discretion. Air monitoring results will be compared to the nuisance dust standard of  $5 \text{ mg/m}^3$  and the ambient air quality standard of  $150 \mu\text{g/m}^3$ .

- C. ENGINEER shall report ENGINEER's air monitoring results to CONTRACTOR, as they become available. For real time monitoring in the field, ENGINEER shall report the data to CONTRACTOR daily, or faster in the event the air monitoring results indicate that CONTRACTOR's activities are causing unfavorable air quality conditions.

**END OF SECTION 01710**

**SECTION 01720**  
**EQUIPMENT DECONTAMINATION**

**PART 1: GENERAL**

**1.01 DESCRIPTION**

- A. All work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Construct an equipment decontamination pad.
  - 2. Decontaminate all equipment and materials used as part of the soil remedial action work.
  - 3. Manage all wastewater and materials generated as part of the decontamination procedures.
  - 4. Manage all solid waste materials generated from decontamination procedures.
- C. Related Sections:
  - 1. Section 02144 Wastewater Treatment, Discharge, and Monitoring
  - 2. Section 02197 Debris Decontamination and Management
  - 3. Section 02300 Excavation, Staging, Backfill, and Compaction

**1.02 SUBMITTALS**

- A. Decontamination Pad Plan: CONTRACTOR shall submit a decontamination plan to show at a minimum the following:
  - 1. Type and thickness of materials used to construct the pad
  - 2. Location and dimension of the pad
  - 3. Grade of the pad or control used to collect wastewater
- B. Decontamination Procedures: CONTRACTOR shall submit a plan outlining procedures to be implemented for decontamination of all equipment. Personnel decontamination and management of PPE shall be completed in accordance with CONTRACTOR'S Project Health and Safety Plan.

### 1.03 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

## PART 2: PRODUCTS

- 2.01 Wastewater: All water generated as part of the decontamination procedures.
- 2.02 Waste Materials: All rags, towels, brushes, gloves, tools, used to decontaminate equipment.
- 2.03 Decontamination Pad: Area designated by CONTRACTOR for decontamination of equipment capable of containment and management of wash water and all solids or products generated from decontamination procedures.
- 2.04 High Pressure Washer: Contractor shall maintain on site a portable high pressure washing unit to be used in decontamination procedures.

## PART 3: EXECUTION

### 3.01 DECONTAMINATION PAD CONSTRUCTION

- A. Contractor shall construct a decontamination pad to meet the following minimum requirements.
  - 1. Constructed of concrete capable of supporting heavy equipment
  - 2. Durable impervious surface that can be scraped clean of soil or debris
  - 3. Graded, sloped, or constructed with a sump to allow the collection of wastewater and runoff at a central point.
  - 4. Constructed with berms and side shields as necessary to prevent decontamination spray from leaving decontamination pad.

### 3.02 HEAVY EQUIPMENT DECONTAMINATION

- A. CONTRACTOR shall decontaminate all equipment used to excavate, transport, or handle contaminated material before entering a support zone from an exclusion zone. CONTRACTOR shall use a combination of pressure washing and hand scraping to remove all contaminated material from the equipment.
- B. ENGINEER will be allowed to inspect all decontaminated heavy equipment before the equipment is removed from the exclusion zone. ENGINEER accepts no responsibility or liability for inadequately decontaminated equipment and ENGINEER's inspection does not release CONTRACTOR of any liability resulting from improperly decontaminated equipment.



**3.03 HAND TOOLS AND MISCELLANEOUS EQUIPMENT DECONTAMINATION**

- A. CONTRACTOR shall clean all hand tools impacted by contaminated materials before the tools are removed from exclusion zones or contaminated areas. CONTRACTOR may dedicate hand tools or miscellaneous equipment to be used only in a specified work area.

**3.04 GENERATED SOLID MATERIALS**

- A. CONTRACTOR shall collect and manage all solid materials generated from equipment decontamination in accordance with Section 02300 of the Specifications.
- B. All personal protective equipment (PPE) shall be managed in accordance with CONTRACTOR'S Health and Safety Plan.

**3.05 WASTEWATER MANAGEMENT**

- A. All wastewater generated during equipment decontamination work shall be pumped or conveyed to the water treatment area for treatment in accordance with the treatment standards in Section 02144, Table 02144-1, of the Specifications.

**END OF SECTION 01720**

# **TECHNICAL SPECIFICATIONS WAUKEGAN MANUFACTURED GAS AND COKE PLANT SITE SOIL OPERABLE UNIT**

## **DIVISION 2 SITE CONSTRUCTION**

Section 02120 Loading, Transportation and Disposal of Contaminated Materials

Section 02144 Wastewater Treatment, Discharge, and Monitoring

Section 02197 Debris Decontamination and Management

Section 02231 Clearing and Grubbing

Section 02240 Storm Water Diversion

Section 02300 Excavation, Staging, Backfill, and Compaction

Section 02528 Well Abandonment

Section 02630 Storm Drainage Repair and Replacement

Section 02745 Bituminous Concrete Pavement

Section 02820 Fencing

Section 02945 Tallgrass Establishment

Section 02946 Tallgrass Maintenance Plan

## **SECTION 02120**

### **LOADING, TRANSPORTATION, AND DISPOSAL OF CONTAMINATED MATERIALS**

#### **PART 1: GENERAL**

##### **1.01 DESCRIPTION**

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to properly dispose of contaminated soil and debris at approved treatment and disposal facilities.
- C. Related Sections:
  - 1. Section 02197 Debris Decontamination and Management
  - 2. Section 02300 Excavation, Staging, Backfill, and Compaction

##### **1.02 REFERENCES**

- A. Construction Quality Assurance Plan, Performance Standard Verification Plan, Prefinal Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. Barr, 2003.

##### **1.03 SUBMITTALS**

- A. Transportation and Disposal Information
  - 1. CONTRACTOR shall submit copies of all documentation that will be used to track the shipment of contaminated soil or other contaminated materials from the Site including: letters of commitment from approved disposal facilities, transportation and disposal notification to the receiving state prior to shipment, prepared manifests or bills of lading, analytical testing results, waste profiles, and certificates of disposal/destruction/treatment/recycle to the ENGINEER. CONTRACTOR shall also submit documentation of CONTRACTOR's payment to the facility.
  - 2. The CONTRACTOR shall submit documentation of actual disposal of ACM at the designated landfill by completing a Disposal Certificate and forwarding the original to the ENGINEER. The documentation provided by the CONTRACTOR shall include transport manifest, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area during abatement.
  - 3. CONTRACTOR shall submit copies of all documentation (weight tickets, etc.) that will be used to track the weight of contaminated soil or other contaminated materials removed from the Site.
  - 4. CONTRACTOR shall, if necessary, obtain approval from local, state, or federal agencies for the routes that its vehicles will travel from the Site to the disposal and treatment

facilities, and shall submit copies of the approved routes and all supporting documentation prior to removing any contaminated soil or other contaminated materials from the Site.

#### **1.04 SEQUENCING AND SCHEDULING**

- A. CONTRACTOR shall obtain and submit letters of commitment from approved disposal facilities prior to loading, transportation, and disposal activities. CONTRACTOR shall at minimum contact one of each of the following facility types.
  - 1. Thermal treatment facility
  - 2. RCRA Subtitle C landfill
  - 3. RCRA Subtitle D landfill
- B. CONTRACTOR's selected disposal facilities shall be approved by WCP Group Representative and ENGINEER prior to loading, transportation, and disposal activities.
- C. Prior to loading, transportation, and disposal activities CONTRACTOR shall confirm with ENGINEER the analytical testing results and the classification of the segregated stockpiles and TASPs as defined in the Construction Quality Assurance Plan.

#### **1.05 BASIS FOR COMPENSATION**

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

### **PART 2: PRODUCTS**

### **PART 3: EXECUTION**

#### **3.01 GENERAL DISPOSAL CRITERIA**

- A. Contaminated materials shall be disposed as follows:
  - 1. Contaminated soil and small debris excavated from the PRZ and classified as Category 1 soil, material excavated as Category 2 or 3 soils, but which exceeds Toxicity Characteristic Leaching Procedure (TCLP) criteria, and IDW currently staged on site in 5-gallon plastic containers shall be thermally treated.
  - 2. Category 2 soil (contaminated soil and small debris excavated from the PRZ which is below TCLP criteria but above the ROD Soil Cleanup Levels, contaminated soil and small debris excavated from the ARZ, IDW currently staged on site (except Category 1 material), and contaminated soil and small debris excavated from the DSS) shall be disposed of in a RCRA Subtitle D landfill.
  - 3. Contaminated soil and small debris that exceeds TCLP thresholds but does not meet requirements for acceptance at the thermal treatment facility shall be disposed of in a RCRA Subtitle C landfill.
  - 4. Large demolition debris shall be managed according procedures set forth in Section 02197.

5. Other contaminated material (e.g. debris, polyethylene sheeting, personal protective equipment (PPE)) generated during the Work shall be disposed of in a RCRA Subtitle D landfill.

3.02 **LOADING, TRANSPORTATION, AND DISPOSAL OF CONTAMINATED SOIL AND OTHER CONTAMINATED MATERIALS**

- A. CONTRACTOR shall load, transport, and dispose of all contaminated soil and other contaminated materials (e.g. debris, polyethylene sheeting, PPE) generated during the Work at approved (by WCP Group Representative) disposal facilities.
- B. CONTRACTOR shall set up on-site loading areas such that contaminated materials will not spill on the truck haul roads, or on the trucks.
- C. CONTRACTOR shall be responsible for and shall complete all the work necessary to ensure that the contaminated soil and other contaminated materials removed from the Site will be accepted by the disposal facilities approved by WCP Group Representative.
- D. CONTRACTOR shall either perform or arrange with the disposal facilities to perform, all required acceptance testing of wastes prior to transportation from the Site. Testing shall be performed in compliance with the waste analysis plan of the disposal facility and all federal, state, and local regulations. Sampling and analysis must demonstrate that the type and concentrations of contaminants present in the wastes are within acceptable ranges established by the disposal facility.
- E. CONTRACTOR shall prepare all forms necessary for waste profiling, acceptance, transportation, and disposal, including, but not limited to waste manifests.
- F. Contaminated soil and other contaminated materials removed from the Site shall be transported directly to an approved disposal facility. The CONTRACTOR shall not change either route or mode of transport after commencing off-site transportation without WCP Group's written approval. The CONTRACTOR shall not transport contaminated soil and other contaminated materials to an intermediate waste storage or transfer facility en route to the approved disposal facility.
- G. All transport vehicles shall be visually clean of soil, dust or other materials prior to vehicle departure from the Site. Trucks to be used for off-site transportation shall remain outside of the contaminated zone.
- H. CONTRACTOR shall cover the load of all trucks carrying clean or contaminated material prior to their leaving the Site.
- I. CONTRACTOR is responsible for arranging weighing of transport vehicles for travel on public roadways.
- J. CONTRACTOR shall maintain strict compliance with all federal, state and local laws, regulations, or requirements when transporting hazardous and non-hazardous soil or other materials from the Site to disposal facilities.
- K. CONTRACTOR shall pay all transportation costs and other charges, tipping fees, and costs associated with the disposal of the contaminated soil and other contaminated materials.
- L. Any spill caused by the CONTRACTOR's handling of any material, including, but not limited to, contaminated soil shall be cleaned up at the CONTRACTOR's sole expense.

3.03 HANDLING, TRANSPORTATION, AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

- A. It is the responsibility of the CONTRACTOR to determine current waste handling, transportation, and disposal regulations for ACM and for each waste disposal landfill. The CONTRACTOR must comply fully with the most current editions of these regulations and all U.S. DOT, EPA, state and local requirements.

3.04 QUALITY CONTROL

- A. Contractor shall utilize equipment, materials, and procedures which are anticipated to meet the performance requirements specified.

**END OF SECTION 02120**

## SECTION 02144

### WASTEWATER TREATMENT, DISCHARGE, AND MONITORING

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements as set forth in Division 1 of these Specifications.
- B. The work included in this section consists of furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Treat contaminated water (including contaminated run-off water and decontamination water) to treatment specifications.
  - 2. Manage all solids generated during wastewater treatment.
  - 3. Discharge the treated water which meets Illinois Class II groundwater standards to the treated water discharge area (shown on Drawing C-03) or for dust control on contaminated soil staging piles, or use treated water which meets Illinois Class I groundwater standards on site for use such as dust control or to water seeded areas following batch approval.
  - 4. Monitor the wastewater discharges to verify compliance with the wastewater discharge requirements.
  - 5. Maintain records of the wastewater treatment and monitoring efforts.
- C. Related Sections:
  - 1. Section 01720 Equipment Decontamination
  - 2. Section 02197 Debris Decontamination and Management
  - 3. Section 02240 Storm Water Diversion
  - 4. Section 02945 Tallgrass Establishment

##### 1.02 REFERENCES

- A. Construction Quality Assurance Plan, Performance Standard Verification Plan, Prefinal Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. Barr, 2003.
- B. Field Sampling Plan, Prefinal Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. CRA, 2003.
- C. Quality Assurance Project Plan, Prefinal Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. CRA, 2003.

### 1.03 SUBMITTALS

#### A. Wastewater Collection, Treatment, Discharge, and Monitoring Plan

1. CONTRACTOR shall submit for approval a Wastewater Collection, Treatment, Discharge, and Monitoring Plan describing the means and methods that will be used to successfully accomplish wastewater treatment and discharge during the Work. At a minimum, treatment shall include filtration and activated carbon treatment. However, the CONTRACTOR shall be responsible for ensuring that all wastewater is treated adequately, using appropriate methods, to meet discharge limits established by U.S. EPA and IEPA. Information in the wastewater treatment plan shall include, but not be limited to, the following:
  - a. Description of key equipment components including supplier and model name, power requirements, operational characteristics and expected performance.
  - b. Description of operation of the treatment processes (process flow charts, estimated duration of treatment cycles, standard operating procedures).
  - c. Description of the monitoring program.
2. The text of the wastewater treatment plan shall be submitted as a Microsoft Word file and figures shall be submitted as Autocad Release 2002 drawings.

#### B. Records of Wastewater Testing Results and Discharge Information

1. CONTRACTOR shall submit the results from any analytical tests or field tests that will be used for operational decisions (i.e., whether to continue treatment or begin discharging wastewater) prior to discharging the associated batch of treated wastewater.
2. CONTRACTOR shall submit the results of analytical tests from samples collected during wastewater discharges.
3. CONTRACTOR shall submit records of the total volume and duration of each wastewater discharge.

### 1.04 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

## PART 2: PRODUCTS

- 2.01 **WASTEWATER:** All water generated as part of the decontamination procedures, collected contaminated water, and any other contaminated water encountered during the Work.
- 2.02 **ACTIVATED CARBON:** CONTRACTOR shall submit manufacturer's chemical analysis for chemical grade to be used in the Wastewater Collection, Treatment, Discharge, and Monitoring Plan.
- 2.03 **FILTER MEDIA:** CONTRACTOR shall submit vendor information on filter media in the Wastewater Collection, Treatment, Discharge, and Monitoring Plan.



### **PART 3: EXECUTION**

#### **3.01 COORDINATION OF WORK**

- A. CONTRACTOR shall be solely responsible for managing and coordinating related work that affects the quality and quantity of the wastewater that is routed to the treatment system for treatment and discharge.
- B. CONTRACTOR shall coordinate wastewater treatment and discharge rates to maintain treatment system capacity.
- C. CONTRACTOR shall avoid transferring non-aqueous phase liquids (oils) and shall minimize the total suspended solids transferred to the treatment system. CONTRACTOR shall have oil absorbent materials on site. CONTRACTOR shall separate non-aqueous phase liquids, oils, and oil sheens from wastewater prior to treatment. CONTRACTOR shall dispose of recovered oil or oil-absorbent materials off site.
- D. CONTRACTOR shall sequence and coordinate work so that the treatment system is operational prior to beginning operations that will generate contaminated run-off or decontamination water.
- E. CONTRACTOR shall continuously maintain the treatment system and continue all wastewater treatment efforts until all of the following conditions have been met: (1) all of the on-site operations that could potentially generate contaminated wastewater have been completed, (2) all of the contaminated materials have been transported off site or backfilled and covered by clean soil, and (3) the potential for contaminated run-off has been eliminated at the Site.

#### **3.02 WASTEWATER TREATMENT SYSTEM**

- A. CONTRACTOR shall operate the treatment system in conformance to the approved Wastewater Collection, Treatment, Discharge, and Monitoring Plan.
- B. CONTRACTOR shall be solely responsible for the final treatment system design and its overall operations and performance. At a minimum, treatment shall include filtration and activated carbon treatment. However, the CONTRACTOR shall be responsible for ensuring that all wastewater is treated adequately, using appropriate methods, to meet discharge limits established by U.S. EPA and IEPA. If surfactants are used they must be biodegradable.
- C. Wastewater shall be discharged to the treated water discharge area identified by the ENGINEER. Alternatively, CONTRACTOR may utilize treated wastewater to control dust generation on site and/or to water the Site following seeding, as specified in Section 02945. CONTRACTOR shall prevent the discharge of (1) any scums, oils, sheens, etc. floating on top of the wastewater, and (2) any settled solids, grit, sediment, etc. CONTRACTOR shall stop the discharge in the event scums, oils, sheens, solids, grit, sediment, etc. are observed in the water being discharged, and CONTRACTOR shall address the source of the problem prior to resuming discharge.
- D. At a minimum, CONTRACTOR shall treat the wastewater to meet Illinois Class II groundwater standards for cyanide, RCRA metals, PAHs, and BTEX, shown in Table 02144-1, prior to discharge to the treated water discharge area or for use as dust control on Category 1 or 2 staging piles and TASPs. If the analytical data from the sample meets Illinois Class I groundwater standards, after acceptance of the data by the U.S. EPA, the may also be used for site-wide dust control or used to water the Site following seeding.

### 3.03 MONITORING OF WASTEWATER TREATMENT AND DISCHARGE

- A. CONTRACTOR shall monitor each batch of wastewater that is treated and discharged from the wastewater treatment system. CONTRACTOR's monitoring shall include periodic field and laboratory testing of wastewater samples, as well as measuring and recording other information as described in Part 1.03 in this section of the Specifications.
- B. CONTRACTOR may conduct additional testing of the wastewater in support of operational or discharge decisions. Prior to discharging treated wastewater, CONTRACTOR shall submit all available testing results to ENGINEER. ENGINEER may require CONTRACTOR to conduct further wastewater treatment prior to discharging.
- C. CONTRACTOR shall notify ENGINEER when a batch of treated wastewater is ready for testing.
- D. CONTRACTOR shall conduct wastewater testing after treatment, prior to discharge in accordance with the Construction Quality Assurance Plan, Field Sampling Plan, and the Quality Assurance Project Plan for the Site. Maximum turn-around-time for laboratory analysis of treated water samples shall be seven days.
- E. CONTRACTOR may not add treated wastewater to a previously sampled treated wastewater batch, unless all batches have been approved for discharge.
- F. CONTRACTOR may not discharge batch until sampling data has been validated, ENGINEER confirms it meets standards (no less than seven days following sampling of the batch) and U.S. EPA approves discharge of the batch.
- G. Re-treatment of water that does not meet the discharge criteria shall be at the CONTRACTOR's sole expense.

Table 02144-1  
Treated Water Discharge Criteria  
[Applicable Illinois Class I and II Groundwater Remediation Ingestion Standards]  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois

Parameter	Illinois Groundwater Remed. Ingest - Class I (mg/L)	Illinois Groundwater Remed. Ingest - Class II (mg/L)
Date	2/5/2002	2/5/2002
<u>General Parameter</u>		
Cyanide	0.2	0.6
<u>RCRA Metals</u>		
Arsenic	0.05	0.2
Barium	2.0	2.0
Cadmium	0.005	0.05
Chromium	0.1	1.0
Lead	0.0075	0.1
Mercury	0.002	0.01
Selenium	0.05	0.05
Silver	0.05	—
<u>PAHs</u>		
Acenaphthene	0.42	2.1
Acenaphthylene	—	—
Anthracene	2.1	10.5
Benzo(a)anthracene	0.00013	0.00065
Benzo(a)pyrene	0.0002	0.002
Benzo(b)fluoranthene	0.00018	0.0009
Benzo(g,h,i)perylene	—	—
Benzo(k)fluoranthene	0.00017	0.00085
Chrysene	0.0015	0.0075
Dibenz(a,h)anthracene	0.0003	0.0015
Fluoranthene	0.28	1.4
Fluorene	0.28	1.4
Indeno(1,2,3-cd)pyrene	0.00043	0.00215
Naphthalene	0.14	0.22
Phenanthrene	—	—
Pyrene	0.21	1.05
<u>BTEX</u>		
Benzene	0.005	0.025
Ethyl benzene	0.7	1.0
Toluene	1.0	2.5
Xylenes total	10.0	10.0

— No standard.

END OF SECTION 02144

## SECTION 02197

### DEBRIS DECONTAMINATION AND MANAGEMENT

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Manage ACM.
  - 2. Clean debris that are segregated from soil during excavation activities.
  - 3. Demolish the debris to reduce their size, as necessary to allow for the subsequent backfill and compaction of the debris in the excavations or for off-site disposal.
  - 4. Transport debris to on-site management areas, as necessary, segregate, size and transport them back to the excavation for backfill or transport off site for disposal.
- C. Related Sections:
  - 1. Section 02120 Loading, Transportation and Disposal of Contaminated Materials
  - 2. Section 02144 Wastewater Treatment, Discharge, and Monitoring
  - 3. Section 02300 Excavation, Staging, Backfill, and Compaction

##### 1.02 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### PART 2: PRODUCTS

##### 2.01 DEBRIS

- A. Large debris includes concrete, rubble, steel, wood, boulders, and any non-native materials encountered during the Work, which must be managed separately due to their size and/or shape. Large debris is any debris over 6 inches in maximum dimension. In general, large debris includes materials that would be difficult to manage with the soil (due to their size and/or shape) using standard earthmoving equipment.
- B. Small debris includes debris that is smaller than 6 inches in maximum dimension, which may remain incorporated into the excavated soil, as long as the small debris does not interfere with the subsequent handling, backfilling, or management of the soil.

- C. Debris management categories include recyclable metal, non-recyclable metal, brick and concrete, ACM, and other debris (e.g. solid waste, wood, etc.).

### **PART 3: EXECUTION**

#### **3.01 ASBESTOS CONTAINING MATERIALS**

- A. CONTRACTOR shall supply sufficient workers certified in ACM identification and abatement procedures to accomplish the Work.
- B. CONTRACTOR shall sample, remove, and manage all asbestos debris uncovered during excavation and grading activities. Types and quantities of ACM are unknown.
- C. Debris identified as ACM shall be managed in accordance with U.S. EPA, OSHA, and State of Illinois asbestos abatement rules and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap between the above references or between the above references and the specification, the strictest provisions are applicable.

#### **3.02 LARGE DEBRIS IN CATEGORY 3 SOIL**

- A. CONTRACTOR shall segregate large debris from Category 3 soil during excavation activities in accordance with Section 02300 of these Specifications.
- B. CONTRACTOR shall protect large debris encountered in overburden soil from contacting contaminated soil and or contaminated liquids. In the event the surface of any large debris becomes contaminated, it shall be managed in accordance with Part 3.03 of this section of the Specifications without additional compensation.

#### **3.03 LARGE DEBRIS IN CONTAMINATED SOIL**

- A. CONTRACTOR shall segregate large debris from contaminated soil during excavation activities in accordance with Section 02300 of the Specifications.
- B. CONTRACTOR shall clean the large debris to meet the following guideline as stated in the Land Disposal Restrictions, 40 CFR 268.45, Table 1, Footnote 3:

"Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.
- C. CONTRACTOR shall certify to ENGINEER that debris placed in cleaned debris stockpiles meets these requirements. If ENGINEER or EPA identify any cleaned debris that does not meet these requirements, CONTRACTOR shall re-clean the debris to meet the requirements without additional compensation.
- D. CONTRACTOR shall segregate cleaned debris into the following management categories: recyclable metal, brick and concrete, ACM, and other debris (e.g. non-recyclable metal, wood, general solid waste). CONTRACTOR shall obtain ENGINEER's written concurrence that the segregation of non-recyclable materials is correct prior to shipping the material for off-site disposal.

- E. CONTRACTOR shall protect cleaned large debris from becoming re-contaminated by contaminated soil and/or contaminated liquids. In the event the surface of any cleaned large debris becomes re-contaminated, it shall be re-cleaned in accordance with this section of the Specifications without additional compensation.
- F. CONTRACTOR shall manage contaminated materials and wash water generated during large debris cleaning in accordance with Section 02144 (Wastewater Treatment, Discharge, and Monitoring) and/or Section 02300 (Excavation, Staging, Backfill, and Compaction) of these Specifications, as appropriate.
- G. Debris that are not suitable for management by surface cleaning (in the opinion of the ENGINEER), shall be reduced in size (e.g., crushed, shredded, chipped, etc.) so that they can be managed with the contaminated soil in accordance with Section 02120 of these Specifications.

### 3.04 DEBRIS MANAGEMENT AND SIZING

- A. Debris shall be managed according to the following table.

Clean and Cleaned Debris Category	Disposal	Size Requirement
Concrete and bricks	Size and re-use on-site	3-inch minus
Recyclable metal	Recycle	As required by recycling facility
Non-recyclable metal	Demolition landfill	As required by landfill
Other debris (solid waste, wood, etc.)	Subtitle D landfill	As required by landfill
ACM	Subtitle D landfill	As required by landfill
<b>Non-clean Debris Category</b>		
Concrete and bricks	Subtitle D landfill with Category 2 soil or Thermal treatment with Category 1 soil	As required by landfill or treatment facility.
Recyclable metal		
Non-recyclable metal		
Other debris (solid waste, wood, etc.)		
ACM		

- B. CONTRACTOR shall crush or otherwise reduce in size cleaned brick and concrete debris as necessary so that the debris can be backfilled in accordance with Section 02300 of the Specifications. In general, brick and concrete debris shall be reduced in size so that their maximum dimension is less than 3 inches in size, and their shape will not create void spaces or otherwise adversely impact their placement and compaction within a 6-inch soil lift. Any sized debris found not to meet the size requirement will be re-sized by CONTRACTOR at no additional compensation.
- C. CONTRACTOR shall temporarily stockpile large debris that have been sized and are ready to be backfilled so that ENGINEER can survey the volume of large debris managed.
- D. CONTRACTOR shall size debris other than brick and concrete as required by the recycling or disposal facility, according to the above table. The CONTRACTOR shall be responsible for identifying the debris size requirements for each facility.

**END OF SECTION 02197**

## SECTION 02231

### CLEARING AND GRUBBING

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs, as well as the general requirements set forth in Division 1 of these Specifications.
- B. Work covered under this section includes providing all materials, equipment, and labor to prepare the Site for construction, including, but not limited to:
  - 1. Clearing operations consisting of cutting and removing trees, shrubs, bushes, and other vegetation within the construction limits as shown on the Drawings, and as required for the performance of the Work.
  - 2. Grubbing operations consisting of removing and disposing of stumps, roots, and other remains that may impede the Work. Disposal will be in accordance with this section and Section 02197.
  - 3. Removing any debris from the work area the ENGINEER indicates may impede the progress of the construction project.
- C. Related Sections
  - 1. Section 01571 Soil Erosion and Sedimentation Control
  - 2. Section 02197 Debris Decontamination and Management
  - 3. Section 02300 Excavation, Staging, Backfill, and Compaction

##### 1.02 SEQUENCING AND SCHEDULING

- A. CONTRACTOR shall complete an adequate amount of the clearing and grubbing operations during Site preparation so that all earthwork activities can fully proceed without delay.
- B. CONTRACTOR shall coordinate clearing and grubbing operations with soil erosion and sedimentation control measures that are implemented under Section 01571 of the Specifications.

##### 1.03 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### PART 2: PRODUCTS [NOT USED]

### **PART 3: EXECUTION**

#### **3.01 CLEARING**

- A. CONTRACTOR shall verify areas to be cleared and grubbed with the ENGINEER before cutting brush or trees.
- B. Unless otherwise designated by the ENGINEER, CONTRACTOR shall remove all trees, stumps, roots, shrubs, deadfall, and other vegetation that would impede construction progress from within the Construction Limits as shown on the Drawings. Vegetation to be cleared shall be cut 6" or less above the original ground surface.
- C. CONTRACTOR shall use appropriate methods to prevent cleared materials from becoming mixed with contaminated materials.

#### **3.02 GRUBBING**

- A. CONTRACTOR shall completely remove all stumps and other vegetative material at or below the ground surface, which may impede construction progress from within the Construction Limits as shown on the Drawings.
- B. CONTRACTOR shall perform grubbing operations such that work performed in exclusion zone (contaminated) areas is completed separately from that completed from support zone (clean) areas.
- C. CONTRACTOR shall segregate all materials grubbed from areas impacted by contaminated materials from materials grubbed in clean soil.
- D. CONTRACTOR shall remove as much soil or impacted material from grubbed material as possible before stockpiling or sizing.
- E. CONTRACTOR shall use appropriate methods to prevent grubbed materials from clean areas from becoming mixed with grubbed materials from contaminated areas.

#### **3.03 DISPOSITION OF MATERIALS**

- A. CONTRACTOR shall dispose of all clean (free of contamination) timber, stumps, other vegetative material and debris within two weeks following generation and in accordance with all state and local rules.
- B. CONTRACTOR may chip clean wood and use to control dust from Category 3 stockpiles or blend with backfill.
- C. Timber, stumps, other vegetative material, or debris that is mixed with contaminated materials shall be managed as contaminated materials in accordance with Section 02300 of these specifications.
- D. Management of grubbed material classified as debris shall be completed in accordance with Section 02197 of these specifications.

**END OF SECTION 02231**



## SECTION 02240

### STORM WATER DIVERSION

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements as set forth in Division 1 of these Specifications.
- B. The work included in this section consists of furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Control surface water as necessary to construct the Work.
  - 2. Divert run-on around contaminated areas.
  - 3. Capture contaminated run-off and route it to the on-site treatment area.
- C. This work shall include provision of, operation of, and maintenance of facilities including berms, barriers, channels, and ditches, and equipment, including pumps, as is necessary to allow CONTRACTOR to properly construct the work in accordance with these Specifications.
- D. CONTRACTOR shall furnish 300-feet, at minimum, of oil-absorbent boom materials suitable for collecting water-borne free oil.
- E. Related Sections:
  - 1. Section 01571 Soil Erosion and Sedimentation Control
  - 2. Section 02197 Debris Decontamination and Management
  - 3. Section 02144 Wastewater Treatment, Discharge, and Monitoring
  - 4. Section 02300 Excavation, Staging, Backfill, and Compaction

##### 1.02 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### PART 2: PRODUCTS [NOT USED]

#### PART 3: EXECUTION

##### 3.01 GENERAL

- A. The CONTRACTOR shall construct, install, and maintain all necessary dewatering and diversion facilities including diversion ditches, dikes, berms, flumes, drains, sumps, pumps, and/or other temporary work necessary to control surface water and prevent run-on around contaminated areas.

- B. Berms constructed to control storm water shall be not less than 9-inches in height, with a 60-inch base. Berms shall be constructed of off-site general fill that contains not less than 15% clay sizes by weight. Berms shall be compacted to assure their integrity in the event heavy equipment drives over them.
- C. The CONTRACTOR shall be responsible for and take measures to protect his personnel, equipment, and supplies from run-off events, whether from rain, snowmelt, lake effects, or other natural causes.
- D. CONTRACTOR shall not allow run-off that has contacted contaminated materials to leave the Exclusion Zone or to contaminate clean soils. Run-off control and recovery efforts shall be established as part of Site preparation prior to beginning excavation of contaminated materials, and shall be continuously maintained until a clean soil cover is established over the contaminated areas. Run-off control and recovery efforts shall include provisions for collecting decontamination wash water or other sources of water generated by the Work in contaminated areas.
- E. CONTRACTOR may allow run-off from TASPs located within future excavation boundaries to infiltrate through the ground surface.
- F. Contaminated run-off shall be directed to collection sumps for recovery or to excavations, and shall be transferred to the on-site treatment area as defined in Section 02144. CONTRACTOR shall sequence and coordinate the Work to avoid excessive volumes of contaminated run-off water to be collected and treated.
- G. CONTRACTOR shall deploy oil-absorbent boom materials as needed to intercept oil migration with surface water runoff and as directed by ENGINEER.
- H. During diversion efforts, CONTRACTOR shall conduct any pretreatment activities and coordinate earthwork activities as necessary to accommodate the subsequent wastewater treatment efforts (e.g., initial sediment removal, non-aqueous phase liquid (NAPL) separation/recovery, etc.).

**END OF SECTION 02240**

## SECTION 02300

### EXCAVATION, STAGING, BACKFILL, AND COMPACTION

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All of the work included in this section shall be completed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered by this section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to:
  - 1. Excavate, segregate, and stockpile soil and debris from the PAH Remediation Zone (PRZ), Arsenic Remediation Zone (ARZ) and Designated Soil Stockpile (DSS).
  - 2. Place the excavated soil into temporary accumulation staging piles (TASPs) of approximately 500 cubic yards each for testing.
  - 3. Move the TASPs to appropriate stockpile areas after results of TASP categorization sampling are available.
  - 4. Backfill and compact the PRZ and ARZ excavations, using the excavated soil that meets the ROD soil cleanup levels; on-site borrow (OSB); clean off-site fill, and clean debris.
  - 5. Construct soil cover over Marginal Zone.
  - 6. Conduct other earthwork activities that are incidental to other work described in the Specifications.
- C. Related Sections:
  - 1. Section 01501 On-Site Health and Safety Requirements
  - 2. Section 01571 Soil Erosion and Sedimentation Control
  - 3. Section 01710 Emission Controls and Air Monitoring
  - 4. Section 02120 Loading, Transportation and Disposal of Contaminated Materials
  - 5. Section 02197 Debris Decontamination and Management
  - 6. Section 02240 Storm Water Diversion
  - 7. Section 02945 Tallgrass Establishment

##### 1.02 REFERENCES

- A. Illinois Department of Transportation (IDOT). Standard Specifications for Road and Bridge Construction, Adopted January 1, 2002.
- B. American Society for Testing and Materials (ASTM), Current Edition, ASTM D 698, ASTM D 2487.
- C. Occupational Safety and Health Administration (OSHA) excavation standards, 29 CFR 1926, Subpart P.

- D. Construction Quality Assurance Plan and Performance Standard Verification Plan, Final Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. Barr, 2003.
- E. Field Sampling Plan, Final Design Report, Soil Operable Unit, Waukegan Manufactured Gas and Coke Plant Site. Waukegan, Illinois. CRA, 2003.

### 1.03 SUBMITTALS

#### A. Earthwork Sequencing Plan

1. CONTRACTOR shall submit an earthwork sequencing plan that addresses all aspects of the earthwork tasks including:
  - a. Excavation practices and procedures to facilitate segregation of soil into categories
  - b. Division of excavation areas into work sequence zones
  - c. Remediation site plan, including anticipated locations of stockpiles (TASPs, debris, and category areas) and haul roads with haul road details.
  - d. Containment/lining system for contaminated materials staged in non-excavation areas. CONTRACTOR's design shall include lining each TASP with polyethylene sheeting and suitably anchoring the polyethylene sheeting. The sheeting shall be watertight. The TASPs shall be located within the Marginal Soil Zone.
  - e. Backfill
  - f. Compaction
  - g. Cover establishment.
2. The plan shall identify equipment to be used for excavation, loading, hauling, stockpiling, backfilling, and compacting soils.
3. The text of the earthwork sequencing plan shall be submitted as a Microsoft Word file and figures shall be submitted as AutoCAD Release 2002 drawings.

#### B. Clean Off-Site Fill Information

1. ENGINEER shall conduct testing and analyses on off-site fill soil specified in paragraphs 2.01 D, E, F, and G, soil used in the construction of haul roads, and other material brought on site as outlined in the Field Sampling Plan for the Site. CONTRACTOR shall identify off-site fill sources to ENGINEER and allow four (4) weeks for ENGINEER to receive analytical results on off-site fill source samples prior to transporting off-site fill to the Site.
2. CONTRACTOR shall submit a statement from the off-site fill source declaring there is no contamination in the fill material, and providing evidence that the source is clean.
3. CONTRACTOR shall submit any results from analytical, geotechnical, or field tests conducted by CONTRACTOR on each off-site fill soil source.
4. ENGINEER may reject off-site fill source based on data and CONTRACTOR shall find replacement at no additional cost.

#### **1.04 SEQUENCING AND SCHEDULING**

- A. CONTRACTOR shall not initiate any of the work described in this section until all mobilization and Site preparation activities as listed in the General Requirements have been completed, and CONTRACTOR has received approval from ENGINEER to initiate excavation of contaminated materials.**
- B. After initiating excavation activities described in this section, CONTRACTOR shall proceed in accordance with the approved earthwork sequencing plan and these specifications.**
- C. CONTRACTOR shall not backfill any excavations until approved to do so by ENGINEER.**
- D. The requested standard turn around time for analytical sample results will not exceed the following times: off-site material samples, four weeks; excavation verification samples, two weeks; TASP samples, one week.**

#### **1.05 PROCESS DESCRIPTION**

- A. Prior to initiating excavation activities and at the beginning of each working day, CONTRACTOR and ENGINEER shall discuss the intended operations for the day including but not limited to:
  - 1. Sequence of excavation and depths of the excavations,**
  - 2. CONTRACTOR's provisions for keeping contaminated material segregated according to the classification by the ENGINEER, and**
  - 3. ENGINEER's expected sampling, measurement, and testing.****
- B. The excavation will be interrupted as needed for observation and sampling, and/or surveying. Results of sampling will be reported promptly to CONTRACTOR. CONTRACTOR shall obtain prior approval from the ENGINEER for changes in the excavation program and earthwork sequencing as the excavation proceeds.**
- C. The individual excavations will be excavated to the anticipated excavation limits shown on the Drawings and verification samples will be collected by the ENGINEER according to the Construction Quality Assurance Plan and Field Sampling Plan. The work at the individual excavations will then be stopped until receipt of analytical results. The excavated perimeter will be expanded on the individual excavations if the samples exceed ROD soil cleanup levels for the Site.**
- D. CONTRACTOR shall account for delays related to post excavation and TASP sampling and approval by ENGINEER and U.S EPA in excavation and staging cost and schedule.**
- E. Excavated materials will be placed in stockpiles or TASPs according to visual/manual segregation methods directed by the ENGINEER as described in Section 01110 and the Construction Quality Assurance Plan.**
- F. Following TASP categorization (resulting from analytical sampling by ENGINEER), CONTRACTOR shall either move the TASP to the specific stockpile area or load and transport the TASP directly off site according to Section 02120.**

#### **1.06 JOB CONDITIONS**

- A. It shall be CONTRACTOR's sole responsibility to examine the Site, review available tests and reports, conduct additional tests, and otherwise determine to its own satisfaction the location**

and nature of all surface and subsurface features and the soil and water conditions that will be encountered, as more fully set forth elsewhere in these specifications.

- B. CONTRACTOR shall be solely responsible for utilizing means and methods that protect adjacent structures and utilities from damage resulting from CONTRACTOR's operations, specifically including, but not limited to, settlement, consolidation, displacement, cracking, vibration, undermining, washout, and uplift caused by excavating, compaction, or any other operation. CONTRACTOR shall be required to repair all structures and utilities damaged as a result of CONTRACTOR's negligent operations at CONTRACTOR's cost.
- C. CONTRACTOR shall provide all shoring, bracing, sheet piling, trench boxes, tiebacks, and other measures required to perform all work in accordance with Laws and Regulations. Specifically, all excavations shall conform to the requirements of OSHA set forth in 29 CFR 1926, Subpart P (Occupational Safety and Health Administration excavation standards).
- D. CONTRACTOR shall inspect all open excavations daily and shall provide a Competent Person to conduct and document the inspections. Competent Person is defined by OSHA as a person who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.
- E. Use of explosives will not be permitted.
- F. CONTRACTOR shall be solely responsible for determining the means and methods for meeting the compaction requirements specified herein, except that compaction by flooding or puddling or other means that involve saturation or over-wetting the soil will not be permitted.

#### 1.07 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

### PART 2: PRODUCTS

#### 2.01 SOIL MATERIALS

- A. Soil Categories
  - 1. Contaminated soil shall include Category 1 and Category 2 materials from the PRZ and ARZ so designated by the ENGINEER, DSS, and IDW. Debris encountered in contaminated soil may be considered part of those materials as long as their size and shape do not interfere with the handling, treatment, or disposal of the materials.
  - 2. Category 3 soil shall include soil within the PRZ and ARZ that the ENGINEER so designates. Debris encountered in Category 3 soil may be considered part of the Category 3 soil as long as they meet the size, shape, and material type requirements for backfill.
  - 3. The estimated limits of the PRZ and ARZ areas to be excavated are shown on the Drawings.
- B. Debris in Excavation
  - 1. Large debris and their management requirements are defined in Section 02197.

2. Smaller debris, as defined in Section 02197, may remain incorporated into the excavated soil, as long as the smaller debris does not interfere with the subsequent handling, backfilling, or management of the soil.
- C. On-Site Borrow
1. On-site borrow (OSB) includes soil currently stockpiled on site, indicated on the Drawings, and deemed suitable for use as backfill within select areas of the Marginal Zone.
- D. Off-Site General Fill
1. Off-site general fill soil shall be mineral soil classified by ASTM D 2487 as SW, SP, SM, or SC, and shall be free of contamination, debris, roots, organic or frozen materials, and boulders larger than 6" in diameter. The off-site general fill soil source may be rejected by ENGINEER if judged to be unsuitable for the intended purpose and CONTRACTOR must propose alternate borrow sources.
- E. Pipe Bedding Material
1. Pipe bedding shall conform to the requirements of IDOT Section 1003.04: Fine aggregates for Trench Backfill, Sand Backfill for Underdrains, Bedding, Porous Granular Backfill and French Drains.
  2. Gradation for pipe bedding shall be FA 1 or FA 2, with % passing the No. 200 sieve = 2% +/- 2%.
  3. Pipe bedding shall be obtained from an off-site source, shall be free of contamination debris, roots, organic or frozen materials, boulders larger than 6" in diameter, and any materials that are determined by ENGINEER to be unsuitable for the intended purpose.
  4. Pipe bedding shall only be used where required by these Technical Specifications or as directed by the ENGINEER.
- F. Granular Subbase
1. Granular Subbase shall conform to the requirements of IDOT Section 311 for Granular Subbase.
  2. Granular Subbase shall be obtained from an off-site source, shall be free of contamination debris, roots, organic or frozen materials, boulders larger than 6" in diameter, and any materials that are determined by ENGINEER to be unsuitable for the intended purpose.
  3. Granular Subbase shall only be used where required by these Technical Specifications or as directed by the ENGINEER.
- G. Topsoil
1. Topsoil shall conform to the requirements of IDOT Section 1081.05 (a).
  2. Topsoil shall be obtained from an off-site source, shall be free of contamination, debris, frozen materials, boulders larger than 3" in diameter, and any materials that are determined by ENGINEER to be unsuitable for the intended purpose.

## 2.02 MATERIALS

### A. Polyethylene Sheeting

1. Temporary sheeting used to line and cover the contaminated soil stockpiles shall be a minimum of 20-mil thick reinforced polyethylene sheeting.

### **PART 3: EXECUTION**

#### **3.01 GENERAL EXCAVATION AND EARTHWORK**

- A. Excavation shall include the excavation, loading, hauling, staging, and stockpiling of materials by CONTRACTOR, including contaminated soil and debris.
- B. CONTRACTOR shall excavate to the lines and grades shown on the Drawings or as directed by ENGINEER. Removal of materials beyond indicated excavation limits without specific direction of ENGINEER, as well as correction of any defective work identified by ENGINEER, shall be at CONTRACTOR's sole expense. Unauthorized excavations shall be immediately backfilled and compacted as specified for authorized excavations of same classification, unless otherwise directed by ENGINEER.
- C. General excavation includes incidental excavations performed by CONTRACTOR for installation of CONTRACTOR's temporary facilities, other items of work for which excavation is specified as incidental, or other work items where excavation is considered incidental or for which a separate pay item is not included in the unit price schedule.
- D. CONTRACTOR shall furnish labor and equipment to excavate test excavations as directed by the ENGINEER.
- E. CONTRACTOR shall conduct all excavation and backfill activities in the dry unless specifically directed by the ENGINEER.
- F. Side slopes of excavations shall comply with applicable Laws and Regulations. CONTRACTOR shall shore or brace excavations where sloping is not possible either because of space restrictions or stability of the material excavated. CONTRACTOR shall maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- G. Air emission controls during general excavation shall be addressed as described in Section 01710 of these Technical Specifications.
- H. Temporary drainage ditches, soil berms, and other diversions outside excavation limits shall be maintained for all excavations as described in Section 01571 and 2240.
- I. CONTRACTOR shall maintain and relocate truck haul roads throughout the Site as necessary for the stage of the Work as described in Section 1500.
- J. In the event any unexpected materials/liquids; drums, containers, tanks, or any similar material of concern is encountered during the excavation activities, the excavation activities in that location shall immediately be stopped and the concern shall be addressed as described in Sections 01501 and 01503 of these Technical Specifications.

#### **3.02 REMEDIAL ZONE SOIL EXCAVATION AND STAGING**

- A. CONTRACTOR shall perform excavation operations in accordance with the approved Earthwork Sequencing Plan.
- B. CONTRACTOR shall excavate each area to limits shown on the Drawings and as directed by the ENGINEER. Excavation beyond the limits shown on the Drawings shall be as directed by



the ENGINEER. Excavated soil shall be loaded, hauled, staged, and stockpiled at the locations shown in the CONTRACTOR's Earthwork Sequencing Plan and approved by ENGINEER.

- C. Based on the results of verification sampling conducted by ENGINEER, CONTRACTOR may be required to excavate beyond the anticipated excavation limits as shown on the Drawings. Excavation perimeters may be extended to remove areas of remaining contaminated soil as directed by the ENGINEER. Remedial zone soil quantities in Section 01110 are considered estimated quantities.
- D. CONTRACTOR shall assist ENGINEER with sampling, specifically by providing labor and equipment (i.e. excavator) necessary to conduct verification sampling from excavations determined unsafe for entry by the Competent Person and excavations with standing water in the bottom.
- E. CONTRACTOR shall segregate excavated soil into the three (3) categories established by the ENGINEER at the point of excavation to minimize mixing of the materials. Visual/manual methods will be used by ENGINEER for distinguishing materials to be segregated according to the Construction Quality Assurance Plan, summarized in Section 01110 of these Specifications. CONTRACTOR is to carefully excavate so as not to mix materials of different field-identified categories. CONTRACTOR may entrain a minimal quantity but not more than 1 foot, of surrounding Category 3 material when excavation Category 1 and Category 2 material. In no case shall CONTRACTOR entrain Category 1 or Category 2 material and place it in a Category 3 TASP. If CONTRACTOR routinely entrains more than 1 foot of adjacent presumed Category 3 material when excavating Category 1 or Category 2 material, excavating work will be suspended until CONTRACTOR proposes new procedures to reduce mixing. Notwithstanding these requirements, with the prior approval of the ENGINEER, selected materials may be blended with Category 1 material, either in the excavation or in the Category 1 stockpile, to improved material handling properties and the material will remain Category 1.
- F. TASP sampling will be performed by the ENGINEER after CONTRACTOR notifies ENGINEER that no further soil will be added to the TASP. The CONTRACTOR must maintain the TASP until the analytical data is received and evaluated and U.S. EPA approval is obtained. The standard turn around time for TASP sample results (one week) will be routinely requested. TASP maintenance shall include control of run-on and runoff, transport of particulates or dust via air or water away from the TASP or other measure as directed by the ENGINEER. CONTRACTOR will be required to move TASP which may impede the progress of the Work or as otherwise directed by ENGINEER, possibly resulting in multiple handling of TASP.
- G. CONTRACTOR shall place material designated by ENGINEER as Category 1 in stockpiles as follows:
  - 1. Material which exceeds TCLP criteria and which meets acceptance criteria of the thermal treatment facility shall be placed in Category 1 stockpiles designated for off-site thermal treatment.
  - 2. Material which exceeds TCLP criteria and does not meet acceptance criteria of the thermal treatment facility shall be placed in stockpiles designated for disposal at a RCRA Subtitle C landfill.
- H. CONTRACTOR shall place Category 2 soil in TASPs in preparation for an analytical testing program conducted by ENGINEER. TASPs shall be approximately 500 cubic yards in size.

1. CONTRACTOR shall place confirmed Category 2 material (analytical testing results below TCLP criteria) in stockpiles designated for off-site disposal at a RCRA Subtitle D landfill.
  2. If the analytical testing results exceed TCLP criteria, ENGINEER will direct CONTRACTOR to place the TASP material in Category 1 stockpiles designated for off-site thermal treatment.
- I. CONTRACTOR shall place Category 3 soil in 2 classes of TASP, according to the visible character of the excavated soil, in preparation for an analytical testing program conducted by the ENGINEER. Separate TASPs will be made for soil designated Category 3a and Category 3b, as described in Section 01110. TASPs shall be approximately 500 cubic yards in size. Category 3a and Category 3b TASPs shall be kept strictly separated until testing results are available, at which point the TASPs shall be managed as follows:
1. CONTRACTOR shall place confirmed Category 3 material (analytical testing results below TCLP criteria and below ROD Soil Cleanup Levels) in stockpiles designated for use as backfill in the excavations located within the Marginal Zone.
  2. CONTRACTOR shall place material which does not meet the analytical criteria for Category 3 soil in the appropriate Category 1 or Category 2 stockpile as directed by ENGINEER.
- J. CONTRACTOR shall remove any large debris, including structures or foundations located below the ground surface, and potential ACM encountered during excavation. Large debris and potential ACM encountered during excavation shall be segregated from the other materials being excavated and managed in accordance with Section 02197 of these Specifications.
- K. To the extent possible, CONTRACTOR shall load contaminated materials directly from excavation equipment into trucks or other transport vehicles, and transport the materials non-stop between the excavations and the stockpiles and TASPs on a single designated route, to minimize the potential spread of contamination. Transport vehicles shall have the means to prevent spillage of loads, or leaking of liquids during transport.
- L. CONTRACTOR shall locate contaminated soil TASPs in areas of planned future excavations or for TASPs located outside of anticipated excavation boundaries, CONTRACTOR shall conform to the earthwork sequencing plan.
- M. Following TASP categorization by analytical testing, CONTRACTOR shall either move the TASP to the specific stockpile area or load and transport the TASP directly off site according to Section 02120.
- N. Any vehicle used to excavate or transport the contaminated soil shall not leave the Site or be used to excavate or transport any materials except contaminated soil until that piece of equipment has been decontaminated. Contractor shall sequence the Work such that equipment used for excavation and transportation of contaminated soil and other contaminated material is not used for excavation and transportation of clean fill until that equipment has been decontaminated. The contaminated soil stockpiles will be within the contaminated zone and trucks to be used for off-site transportation shall remain outside of the contaminated zone.
- 3.03 BACKFILL
- A. CONTRACTOR shall not backfill contaminated soil excavations until approved by ENGINEER.

- B. Fill materials including soil meeting ROD cleanup levels, OSB, clean off-site fill, and clean debris shall be placed as shown on Drawing C-05.
- C. Backfill materials shall be placed in lifts not to exceed 12 inches in uncompacted thickness, except clean debris, which shall be placed in lifts not to exceed 6 inches in uncompacted thickness.
- D. Clean debris managed under Section 02197 shall be backfilled with the soil meeting ROD cleanup levels, OSB, and clean off-site fill. Debris shall not be placed in the Marginal Zone Soil Cover with the clean off-site fill, or topsoil. Lifts of debris shall be alternately placed with lifts of soil.
- E. CONTRACTOR shall prevent the concentration of wood debris within the backfilled materials. The maximum concentration of wood materials contained in any truckload of material that is transported to the excavation for backfill shall be no more than 1% by volume.
- F. If any excavations are backfilled in the wet, clean, sized debris or granular fill shall be used to fill below the water surface and shall be carefully placed to prevent segregation of materials. Clean, sized debris or granular fill shall not be dropped from above the water surface. Place clean, sized debris and or granular fill to a depth up to 8 inches above the water surface prior to compaction.

#### 3.04 COMPACTION

- A. CONTRACTOR shall compact each backfilled lift greater than 1 ft below ground surface to a minimum of 95 percent of maximum standard Proctor density (ASTM D 698).
- B. Unless otherwise specified, CONTRACTOR shall machine compact the top 1 ft of all backfilled materials by driving tracked construction equipment over each lift. This compaction must firm soil and eliminate voids, and provide a suitable rooting zone for plants.
- C. In areas of parking lot and pavement restoration each lift shall be compacted to a minimum of 95 percent of maximum standard Proctor density (ASTM D 698).
- D. ENGINEER may conduct density testing on each backfilled material that requires compaction as specified in the Construction Quality Assurance Plan. CONTRACTOR shall accommodate that testing by informing ENGINEER of the backfill schedule, suspending operations as needed for the testing, and uncovering work as requested for testing.

#### 3.05 COVER CONSTRUCTION

- A. Site shall be rough graded and compacted to final subgrade elevations prior to placing and establishing final soil cover and grade.
- B. A minimum of 6-inch cover is required within the limits of the Marginal Soil Zone. Final compacted topsoil thickness shall not be less than 6 inches in the Marginal Soil Zone.
- C. Areas in which OSB is placed shall be covered by a total of 10 inches of soil consisting of 4 inches off-site general fill and a minimum of 6 inches topsoil. Minimum final cover depths, after compaction, are shown on Drawing C-05.
- D. Subject to EPA approval, gravel surfaced areas will be repaired in-kind with granular subbase.

3.06 FIELD QUALITY CONTROL

- A. CONTRACTOR shall utilize equipment, materials, and procedures that are anticipated to meet the quality requirements specified.
- B. CONTRACTOR shall permit ENGINEER to observe subgrades and fill layers before further construction work is performed thereon. The ENGINEER may test subgrades and fill layers.
- C. CONTRACTOR shall coordinate operations so that ENGINEER may conduct quantity surveys.

3.07 MAINTENANCE

- A. CONTRACTOR shall repair and reestablish grades in settled, eroded, and rutted areas within the Construction Limits.
- B. CONTRACTOR shall comply with all laws and regulations applicable to the Work. This shall include the use of erosion control methods, when necessary, which will allow movement of water but will retain sediment so as to protect erodible or discharge areas from sediment-laden or contaminated runoff.

**END OF SECTION 02300**

## **SECTION 02528**

### **WELL ABANDONMENT**

#### **PART 1: GENERAL**

##### **1.01 DESCRIPTION**

- A. All work included in this section shall be done in accordance with the following paragraphs, as well as the general requirements set forth in Division 1 of these Specifications.
- B. The work covered under this section of the Specifications consists of furnishing all supervision, labor, materials, equipment, and performing all operations necessary to abandon six monitoring wells located in or near excavation areas shown on Drawing C-03, and any additional wells as directed by ENGINEER, and dispose of well materials.
- C. Well abandonment shall be conducted prior to beginning ARZ and PRZ excavation activities, unless otherwise directed by ENGINEER.
- D. All wells not specified for abandonment shall be protected by the CONTRACTOR. Any wells that are damaged by CONTRACTOR shall be replaced by CONTRACTOR at its sole expense.

##### **1.02 JOB CONDITIONS**

- A. CONTRACTOR shall be solely responsible for evaluating existing facilities and Site conditions and considering all factors that may affect progress or performance of the Work.
- B. CONTRACTOR shall become owner of materials generated by the monitoring well abandonment procedures and shall dispose of or recycle all debris in accordance with applicable laws and regulations.

##### **1.03 SUBMITTALS**

- A. CONTRACTOR shall submit to ENGINEER copies of all required permits, submittals, and any other documentation that the wells were abandoned in accordance with all local, state, and federal requirements, including copies of the well sealing forms submitted to Lake County.

##### **1.04 REFERENCES**

- A. ASTM C150-85a Specifications for Portland Cement.

##### **1.05 BASIS FOR COMPENSATION**

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### **PART 2: PRODUCTS**

##### **2.01 MATERIALS**

- A. Portland Cement: Portland cement (Type I) shall meet the requirements of ASTM C150-85a.

- B. Bentonite: Bentonite shall be finely ground, premium grade bentonite. The bentonite shall be free from lumps and objectionable material that would prevent easy mixing into a smooth fluid.
- C. Neat Cement Grout: Neat cement grout shall consist of a mixture of one bag (94 pounds) Portland cement (Type I) to not more than 6 gallons of potable water. Bentonite up to 5 percent by weight of cement may be added. No other admixtures will be allowed.

### **PART 3: EXECUTION**

#### **3.01 EQUIPMENT PREPARATION**

- A. Equipment should be cleaned with a high-pressure water jet and all tools that enter the well shall be cleaned with steam or a high-pressure hot-water jet sufficient to remove all grease, oil, and other objectionable material. Water used for cleaning shall be potable water free of additives. No joint dressing or other compound shall be used on down-hole equipment.

#### **3.02 WELL ABANDONMENT**

- A. Groundwater monitoring wells to be abandoned are designated on Drawing C-03. Leave all other wells not specified for abandonment undisturbed and protect them from damage. If a well not specified for abandonment is damaged, it shall be reinstalled at the CONTRACTOR's sole expense.
- B. CONTRACTOR shall abandon the designated wells before ARZ or PRZ excavation begins, with prior approval from the ENGINEER. If additional wells are subsequently identified by the ENGINEER for abandonment, CONTRACTOR shall coordinate the abandonment schedule with ENGINEER.
- C. CONTRACTOR shall make proper notification for well sealing in accordance with local, state, and federal requirements.
- D. CONTRACTOR shall abandon wells in accordance with applicable codes, regulations, and requirements. CONTRACTOR shall provide responsibility for well abandonment in accordance with current local, state, and federal requirements. Well logs are in Attachment A.
- E. All well casings shall be removed to a depth of four feet below ground surface. In addition, well protection (i.e., protective posts or surface mount) shall be removed.
- F. Well abandonment procedure:
  - 1. Fill the riser and screen with neat cement grout starting from the base of the screen. Grout shall be placed by pumping under pressure through a tremie pipe. After 6 inches of grout has been placed in the bottom of the well, the discharge point of the tremie pipe shall be maintained at least 3 inches or more below the grout surface.
  - 2. After the grout has been placed, remove the protective casing and posts. Remove all riser and piping above three feet below ground surface and backfill area to existing grade.

#### **3.03 DOCUMENTATION OF WELL ABANDONMENT**

- A. CONTRACTOR shall maintain a written record of monitoring well abandonment. CONTRACTOR shall submit well sealing forms to Lake County in accordance with county requirements.

B. CONTRACTOR shall furnish a well abandonment report. The report for well abandonment shall include, but not necessarily be limited to, the following information:

1. Well number
2. Location
3. Date of abandonment
4. Quantity of neat cement grout tremied into well
5. Depth of monitoring well
6. Groundwater levels
7. Abandonment conditions encountered

**END OF SECTION 02528**

## SECTION 02630

### STORM DRAINAGE REPAIR AND REPLACEMENT

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs, the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered under this section includes providing all materials, equipment, and labor to furnish and install storm sewer pipe and fittings including, but not limited to:
  - 1. Reinforced concrete pipe (RCP), bends, and appurtenances.
  - 2. Precast reinforced concrete manhole/catch basin units.
  - 3. Bedding material.
  - 4. High Density Polyethylene Pipe (HDPEP).
- C. For the purpose of this section, pipe shall include but not be limited to concrete pipe and polyethylene pipe. CONTRACTOR shall match existing pipe type.
- D. CONTRACTOR shall protect drainage pipes and structures encountered during the Work. Repair or replacement of storm drainage systems that is necessary shall be conducted in accordance with this Specification.

##### 1.02 REFERENCES

- A. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, 2002 Edition, hereafter referred to as IDOT Standard Specifications.
- B. American Society for Testing and Materials, Current Edition, hereafter referred to as ASTM.

##### 1.03 SUBMITTALS

- A. CONTRACTOR shall submit shop drawings of the precast concrete manhole/catch basin units to the ENGINEER for review and approval in accordance with Section 01330 of these Specifications.
- B. CONTRACTOR shall submit a certificate of compliance for the RCP and HDPEP a minimum of two weeks prior to performing the work.
- C. CONTRACTOR shall submit gradation test results for the bedding material a minimum of two weeks prior to using the material for the work.

##### 1.04 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.



## **PART 2: PRODUCTS**

### **2.01 PRECAST CONCRETE MANHOLE/CATCH BASIN UNITS**

- A.** Precast concrete manhole catch basin units shall conform to the requirements of IDOT Standard Specification 1043. The reinforcing steel shall be designed by the vendor to meet the following conditions and shall be submitted to the ENGINEER in accordance with Part 1.03 of this Section:
  - 1. Soil elevations shall be as shown on Drawing C-04. Soil shall be assumed to have a saturated unit weight of 150 pounds per cubic foot with an internal friction angle of 20°.
  - 2. Groundwater elevation shall be assumed to be at the ground surface at all locations.
  - 3. Shall be capable of supporting HS-20 loading with a minimum of two feet of soil cover.

### **2.02 REINFORCED CONCRETE PIPE**

- A.** RCP shall conform to the requirements of IDOT Standard Specification 1040.03.
  - 1. Soil elevations shall be as shown on Drawing C-04. Soil shall be assumed to have a saturated unit weight of 150 pounds per cubic foot with an internal friction angle of 20°.
  - 2. Groundwater elevation shall be assumed to be at the ground surface at all locations.
  - 3. Shall be capable of supporting HS-20 loading with a minimum of two feet of soil cover.

### **2.03 HIGH DENSITY POLYETHYLENE PIPE**

- A.** HDPEP
  - 1. HDPEP solid wall with heat-fused joints, shall be "bluestripe" for potable water supply and manufactured in accordance with ASTM F-714. All pipe joints shall be water tight and heat-fused as specified. HDPEP shall meet the following conditions:
  - 2. Groundwater elevation shall be assumed to be at the ground surface at all locations.
  - 3. Shall be capable of supporting HS-20 loading with a minimum of two feet of soil cover.

### **2.04 PIPE BEDDING MATERIAL**

- A.** Pipe bedding material shall conform to the requirements of IDOT Standard Specification 1003.04 for bedding material.

### **2.05 PIPE BACKFILL MATERIAL**

- A.** Pipe backfill material shall be off-site general fill (Paragraph 2.01D, Section 02300 of these Specifications), which is less permeable than the surrounding native soil.

## **PART 3: EXECUTION**

### **3.01 PRECAST CONCRETE MANHOLE/CATCH BASIN UNITS**

- A.** Salvage existing catch basin grate and manhole if possible. Replace all adjustment rings with new material on salvaged manholes. New precast concrete manhole/catch basin shall be constructed in accordance with IDOT Standard Specification 1043.

3.02 FILL PLACEMENT AROUND PIPES AND STRUCTURES

- A. The CONTRACTOR shall notify ENGINEER before placing fill around pipes or structures.
- B. Do not use frozen fill material or place on frozen subgrade.
- C. Excavation and backfill shall conform to IDOT Standard Specification 550.
- D. The native material under the bedding material shall be compacted to 95% standard Proctor density.
- E. The bedding material shall be compacted to 100% standard Proctor density.
- F. All unsuitable peat materials shall be excavated.
- G. Place fill material in maximum 4-inch loose lifts under pipe haunches and compact to 95% of maximum standard Proctor density, ASTM D 698, with hand-operated vibrating compactor until firmly compacted to pipe spring line and in strict accordance with the pipe manufacturer's specifications.
- H. No pipe shall be laid in water nor when the trench bedding conditions are unsuitable, unstable, and/or unconsolidated.

3.03 FIELD QUALITY CONTROL

- A. Pipe and structure installation will be subject to rejection for any of the following reasons.
  - 1. Failure to conform to the Specifications, particularly with regard to:
    - a. Compaction under and around the pipe and/or structure
    - b. Line and grade
  - 2. Fractures or cracks passing through barrel wall or socket.
  - 3. Chips or fractures on interior of barrel exceeding 2 inches in length, 1 inch in width, and depth more than  $\frac{1}{4}$  barrel thickness.
  - 4. Cracks which, in the opinion of ENGINEER or WCP Group Representative, may impair strength, durability, or serviceability of pipe.
  - 5. Defects indicating improper proportioning, mixing, or molding.
  - 6. Damaged ends where such damage would prevent making a satisfactory joint.
  - 7. Non-water tight pipe or structure joints

**END OF SECTION 02630**

## **SECTION 02745**

### **BITUMINOUS CONCRETE PAVEMENT**

#### **PART 1: GENERAL**

##### **1.01 DESCRIPTION**

- A. All work included in this section shall be performed in accordance with the following paragraphs as well as the General Requirements set forth in Division 1 of these Specifications.
- B. Work under this section includes restoring removed or damaged concrete and bituminous pavement during the performance of the Work.

##### **1.02 REFERENCES**

- A. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, 2002 Edition, hereafter referred to as IDOT Standard Specifications.

##### **1.03 SUBMITTALS**

- A. Submit for documentation signed certification that materials furnished and mixture designs to be used for this work have been tested and conform to the applicable requirements of these Specifications. Indicate source of materials, mixture designations and proportions, name and address of testing laboratory, and dates of tests.

##### **1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Only materials meeting requirements at time of placement (temperature, etc.) will be accepted.
- B. Immediately remove from Site all materials not meeting requirements.

##### **1.05 SEQUENCING AND SCHEDULING**

- A. Do not proceed until testing of base materials has been completed by ENGINEER or WCP Group Representative.
- B. Do not proceed until grading of base materials has been completed in accordance with this section. Touch up or regrade as necessary to provide surface free of ruts, rills, depressions, and other undesirable features.

##### **1.06 BASIS FOR COMPENSATION**

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

## **PART 2: PRODUCTS**

### **2.01 BITUMINOUS BASE COURSE**

- A. Bituminous base course shall meet the material requirements of IDOT Section 355, grade PG58-22 or PG64-22, for standard Bituminous Base Course. Bituminous base course shall be plant mixed.

### **2.02 BITUMINOUS WEARING COURSE**

- A. Bituminous wearing course shall meet the material requirements of IDOT Section 405 for Bituminous Surface Plant Mix (Class B). Bituminous Wearing Course shall be plant mixed.

### **2.03 BITUMINOUS TACK COAT**

- A. Bituminous tack coat shall conform to the requirements of IDOT Section 406 for Bituminous Tack Coat.

### **2.04 SUBBASE MATERIAL**

- A. Subbase material shall conform to the requirements of IDOT Section 311 for Granular Subbase.

## **PART 3: EXECUTION**

### **3.01 GENERAL**

- A. Replace pavement as required to restore to pre-demolition limits, thicknesses, and types.
- B. When matching existing pavement, sawcut existing edges full depth straight and vertical.

### **3.02 GRANULAR SUBBASE MATERIAL**

- A. Place granular subbase material to the compacted thicknesses for new bituminous surfaces as shown on the Drawing C-05. Compaction shall be in accordance with IDOT Section 311.05.
- B. Subbase material disturbed or removed during the Work is to be replaced and compacted to existing grade before disturbance.

### **3.03 BITUMINOUS BASE COURSE**

- A. Bituminous base course shall be placed and compacted in accordance with IDOT Specification Section 355, except that CONTRACTOR shall be solely responsible for determination of appropriate equipment operating conditions and grade control.

### **3.04 BITUMINOUS TACK COAT**

- A. Apply in accordance with the requirements of IDOT 406.
- B. Apply between paving lifts and to all curb faces, edges of existing pavement, and all manholes, castings and other surfaces to be abutted.
- C. Apply immediately prior to placement of bituminous pavement. Recoat areas that have been coated more than 8 hours before placement of pavement.
- D. Clean excess from all surfaces not required to be coated.

**3.05 BITUMINOUS WEARING COURSE**

- A. Bituminous wear course shall be placed and compacted in accordance with IDOT Specification Section 406, except that CONTRACTOR shall be solely responsible for determination of appropriate equipment operating conditions and grade control.
- B. Final rolled surface shall match all curb, slabs, and adjacent surfaces within plus 1/8 inch, minus 0 inch.
- C. Following placement and compaction, the thickness of the complete asphalt pavement section shall be within plus or minus 1/4 inch of the required thickness and the finished surface shall show no variations greater than 1/8 inch from the edge of a 10-foot straightedge. The finished surface shall be free of "depressions" or other areas of standing water following complete wetting sufficient to generate runoff.
- D. The finished surface shall be tight and shall not exhibit a porous or fractured surface capable of trapping or holding moisture.

**3.06 PATCHING ASPHALT PAVEMENT**

- A. All patching of asphalt paving shall be accomplished using plant mixed materials meeting the requirements for the layer being patched. Compaction and other requirements shall be as for the layer being patched. All asphalt and concrete edges shall be liberally coated with bituminous tack coat, as shall all horizontal layers between bituminous materials.

**3.07 FIELD QUALITY CONTROL**

- A. The CONTRACTOR shall establish and maintain quality control for work covered under this section to assure compliance with the Contract requirements, including compaction test results if requested by ENGINEER or WCP Group Representative.

**END OF SECTION 02745**

## SECTION 02820

### FENCING

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs as well as the general requirements set forth in Division 1 of these Specifications.
- B. The work covered under this section includes furnishing and installing in a satisfactory condition all fencing required on this project. Extent and location shall be as shown on the Drawings.
- C. Other existing fencing shall be protected during construction. Any damage to the existing fences shall be repaired under this section of the Specifications.

##### 1.02 REFERENCES

- A. The following are complete titles of references cited in this Section:
  - 1. ASTM A153, "Zinc Coating on Iron and Steel Hardware"
  - 2. ASTM A491, "Aluminum-Coated Steel Chain-Link Fence Fabric"
  - 3. ASTM A585, "Aluminum-Coated Steel Barbed Wire"
  - 4. ASTM C33, "Concrete Aggregates"
  - 5. ASTM C150, "Portland Cement"
  - 6. ASTM F900, "Industrial and Commercial Swing Gates"

##### 1.03 QUALITY ASSURANCE

- A. Standard of Manufacture, Chain Link Fence: Comply with the standards of the Chain Link Fence Manufacturer's Institute for "Galvanized Steel Chain Link Fence Fabric" and as herein specified.

##### 1.04 BASIS FOR COMPENSATION

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### PART 2: PRODUCTS

##### 2.01 CHAIN LINK TYPE FENCING

- A. Fabric shall be aluminum coated steel chain link No. 9 gauge wire woven in a 2-inch mesh. The top and bottom salvage shall have a barbed finish. Fabric to conform to ASTM A491-80, Class II. Fabric height to be 72 inches.
- B. Aluminum coating shall be not less than 0.40 ounces per square foot of wire surface.

- C. Bottom tension wire shall be No. 7 gauge aluminum coated spring coil.
- D. The chain link fabric shall be securely fastened to all terminal posts using 3/16-inch by 3/4-inch tension bars and heavy 11-gauge tension bands. The fabric shall be fastened to all intermediate posts with 9 gauge tie wires. Fabric shall be tied to top rail with 9 gauge tie wires.

## 2.02 CHAIN LINK FENCING FRAME WORK

- A. General: Pipe sizes indicated are commercial pipe size. Galvanized steel with not less than 1.8-ounce zinc per square foot. Equivalent tubular sections, H-sections or roll-formed sections may be substituted for pipe sections.
- B. Hardware and Accessories: Galvanized, ASTM A153-82.
- C. End, Corner and Pull Post
  - 1. 3.0-inch OD steel pipe, 5.79 pounds per lineal foot
- D. Line Posts: Space 10 feet o.c. maximum, unless otherwise shown, of following minimum sizes and weights.
  - 1. 2.5-inch OD steel pipe, 3.65 pounds per lineal foot
- E. Top Rail: 1.625-inch OD, manufacturer's longest lengths, with expansion type couplings, approximately 6 inches long, for each joint. Provide means for attaching top rail securely to each gate, corner, pull, and end post.
- F. Gate Posts:

<b>Gate Width</b>	<b>Pipe (O.D.) Size In Inches</b>	<b>Pounds Per Lineal Foot</b>
Up to 6 feet	2.875	5.79
Over 6 feet up to 13 feet	4.00	9.11
Over 13 feet to 18 feet	6.625	18.97
Over 18 feet	8.625	24.70

- G. Post Brace Assembly: Manufacturer's standard adjustable brace at gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric.
- H. Replacement Gate Fabrication: ASTM F900.
  - 1. All replacement gates shall be fabricated to meet the opening sizes shown on the Drawings. Provide additional horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware and accessories. Space so that frame members are not more than 8 feet apart.
  - 2. Assemble gate frames by welding or with special malleable or pressed steel fittings and rivets for rigid connections. Use same fabric as specified for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical edges. Bars may also be used at top and bottom edges. Attach stretchers to gate frame at not more than 15 inches on centers. Attach hardware with rivets or by other means that will provide security against removal or breakage.
  - 3. Cross-bracing shall be provided on all gates where necessary to provide frame rigidity without sag or twist.

## 2.03 CONCRETE

- A. Provide concrete consisting of Portland cement, ASTM C150, aggregates, ASTM C33, and clean water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 2,500 psi, *using at least four stacks of cement per cubic yard, 1-inch maximum size aggregate, maximum 3-inch slump, and 2 percent to 4 percent entrained air.*

## 2.04 TEMPORARY CONSTRUCTION FENCE

- A. Construction fence shall be orange plastic construction fence or approved equal, with a minimum height of 4 feet.

## 2.05 TEMPORARY CONSTRUCTION FENCE POSTS

- A. Fence posts shall be designed and installed to be sufficient to properly maintain the temporary fence for the required duration.

# PART 3: EXECUTION

## 3.01 DEMOLITION

- A. Salvage existing fencing and posts shown on the Drawings. Relocate existing wire fabric fence system at location shown on Drawings.
- B. Any unsalvageable fence material shall be stockpiled at a designated location on site and disposed of in accordance with Section 02197.

## 3.02 INSTALLATION CHAIN LINK FENCING

- A. Line Posts: Drive line posts or drill holes for post footings in firm undisturbed or compacted soil.
  - 1. Unless otherwise indicated, drive posts or excavate hole depths approximately 3 inches lower than the post bottom, with bottom of posts set not less than 36 inches below the surface when in firm, undisturbed soil.
- B. Setting Corner and Gate Posts: Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
  - 1. Center and align posts in holes 3 inches above bottom of excavation.
  - 2. Place concrete around posts. Check each post for vertical and top alignment, and hold in position during placement and finishing operation.
  - 3. Finish tops of footings, and slope or dome to direct water away from posts. Extend footings for gate posts to the underside of bottom hinge.
- C. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tensions.
- D. Tension Wire: Install tension wires by weaving through the fabric and tying to each post with not less than 6 gauge galvanized wire, or by securing the wire to the fabric. Bottom tension wire shall be stretched taut from terminal to terminal post and securely fastened to each intermediate post 6 inches above grade. Attach to fabric every 24 inches.



- E. **Fabric:** Leave approximately 2 inches between finish grade and bottom salvage. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released. There shall be one tension band for each foot in the height of fence at all terminal posts. The fabric shall be fastened to all intermediate posts with tie wires, spacing not to exceed 12 inches apart. Fabric shall be tied to top rail with tie wires, spacing not to exceed 24 inches.
- F. **Stretcher Bars:** Thread through or clamp to fabric 4 inches o.c., and secure to posts with metal bands spaced 12 inches o.c.
- G. **Tie Wires:** Use U-shaped wire, conforming to diameter of pipe to which attached clasp pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.
- H. **Fasteners:** Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

### 3.03 INSTALLATION OF CONSTRUCTION FENCE

- A. Construction fence shall be installed at the locations shown on Drawing C-03 or as necessary to delineate work zones.
- B. Construction fence shall be supported by steel fence posts at a minimum of every 10 feet on center.
- C. Fence shall be tied to the support posts at a minimum at the top, center, and bottom of the fence.
- D. CONTRACTOR shall continuously maintain the fence

### 3.04 FIELD QUALITY CONTROL

- A. The CONTRACTOR shall establish and maintain quality control for work under this section to assure compliance with contract requirements.

**END OF SECTION 02820**

## SECTION 02945

### TALLGRASS ESTABLISHMENT

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs and the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered under this section includes providing all materials, equipment, and labor necessary for tallgrass establishment within the areas outlined on the Drawing C-05, including:
  - 1. Topsoil Preparation
  - 2. Seeding
  - 3. Mulching

##### 1.02 QUALIFICATIONS AND SUBMITTALS

- A. CONTRACTOR shall perform all work under the direct control of a superintendent conforming to the minimum qualifications, including tallgrass establishment experience and extensive plant knowledge.
  - 1. CONTRACTOR to submit a minimum of three tallgrass establishment projects (list only projects that were installed under the foreman assigned to this project). Include the project location and the Client and/or Landscape Architect's name and phone number for ENGINEER to contact.
  - 2. Foreman to have a minimum of five years of experience in tallgrass establishment and prairie management. All crews to be familiar with seeding procedures and be under the supervision of a qualified foreman.
- B. CONTRACTOR shall not change foreman without the written approval of ENGINEER.

##### 1.03 REFERENCES

- A. AOSA – Association of Official Seed Analysis: Rules for Testing Seeds, Journal of Seed Technology, 1991 Edition.
- B. ICBN – International Code of Botanical Nomenclature.
- C. ICNCP – International Code of Nomenclature of Cultivated Plants.
- D. ANSI – American National Standards Institute: American Standard for Nursery Stock, ANSI Z60.1-1990.
- E. IDOT, Standard Specifications for Road and Bridge Construction, Adopted January 1, 2002.

##### 1.04 DEFINITIONS

- A. PLS: Pure Live Seed. A unit of measure used to define the amount of viable seed in a seed lot.

**1.05 QUALITY ASSURANCE**

- A. The ENGINEER shall have the right to inspect seeds, either at the place of growth or at the Site before planting, for compliance with requirements for name, variety, size, quantity, quality and mix proportion.
- B. Delivery and Storage of Seed:
  - 1. CONTRACTOR shall have the seeds shipped and stored with protection from weather or other conditions which would damage or impair the effectiveness of the product.

**1.06 BASIS FOR COMPENSATION**

- A. Compensation for all work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

**PART 2: PRODUCTS**

**2.01 TOPSOIL**

- A. Topsoil shall be well drained (Paragraph 2.01G, Section 02300 of these Specifications).

**2.02 SEED**

- A. Seed shall be blended by the vendor, and ratio shall also be guaranteed by the vendor in writing to be as specified by proper labeling. See Drawing C-05 for seed specification.
- B. Seed shall be true to their name as specified. The genetic origin of all seeds shall be from as close to the project location as possible but no farther than a 200-mile radius. No relabeled or rebagged seeds from beyond this mileage limit will be accepted without prior written approval by the ENGINEER.
- C. Cover Crop: See Drawing C-05.
- D. Seed Mix: See Drawing C-05.

**2.03 MULCH: Straw in conformance with IDOT 1081.06 (a), (1).**

**2.04 WATER: CONTRACTOR to verify water source and availability prior to construction. If permits or water meters are required the cost shall be borne by the CONTRACTOR. CONTRACTOR to supply all hoses and appropriate connectors for building outlets and/or hydrants.**

**2.05 SUBSTITUTIONS**

- A. Seed substitution will only be allowed if acceptable proof is submitted to the ENGINEER, that a seed specified is not obtainable, due to conditions beyond the control of the CONTRACTOR and for reasons other than cost changes since submittal of CONTRACTOR'S Bid.

**PART 3: EXECUTION**

**3.01 SITE PREPARATION**

- A. Prior to cultivation, CONTRACTOR shall examine area and notify ENGINEER of conditions found.

- B. If herbicide application is deemed necessary, a broad spectrum, non-persistent herbicide such as glyphosate shall be applied to remove vegetation. Apply per manufacturer's recommendation.
    - 1. Spray in proper weather conditions.
    - 2. Reapply initial spray if it does not take.
  - C. Topsoil Preparation:
    - 1. CONTRACTOR shall disc topsoil/existing soil as required and firm the soil at a compaction of less than five pounds per square inch, and smooth-drag as needed for planting purposes.
    - 2. CONTRACTOR shall not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling. Do not work soil when muddy or frozen.
    - 3. CONTRACTOR shall use equipment of appropriate size and low ground pressure equipment to achieve a relatively smooth soil surface free of high areas, depressions and tracks, and to minimize soil compaction.
- 3.02 DRILL SEEDING OF GRASSES
- A. Prior to seeding, CONTRACTOR shall examine area to verify readiness for seeding work. CONTRACTOR shall notify ENGINEER of conditions found.
  - B. CONTRACTOR shall notify ENGINEER a minimum of (3) three days in advance of any seeding work to occur.
  - C. CONTRACTOR shall drill grass seeds no deeper than 2-inch depth.
  - D. CONTRACTOR shall seed grasses between May 15 and June 30 and from October 15 to December 1. Immediately follow seeding with mulching. Written approval from ENGINEER is required for any adjustment to these dates.
  - E. CONTRACTOR shall broadcast cover crop seed using a mechanical spreader at the rate specified. See Drawing C-05 for seeding area and seed schedule for application rates.
- 3.03 MULCHING
- A. Uniformly apply straw mulch over all seeding. Approximately 10% of the soil surface shall be visible through the mulched areas. Disk anchor as specified in IDOT 251.03 (b),(2).
  - B. Keep vehicle and equipment traffic off seeded and mulched areas. Keep foot traffic to a minimum.
- 3.04 CLEAN-UP
- A. Daily: CONTRACTOR shall keep work areas clean, neat and orderly.
  - B. Final: CONTRACTOR shall clean up and remove deleterious materials and debris from the entire work area prior to review and acceptance of work.

**3.05 MAINTENANCE AND WARRANTY OF SEED WORK**

- A. CONTRACTOR shall be responsible for maintaining all seeded areas by weeding, mowing, reseeding, and any other maintenance necessary to establish the growth of desired plants.
- B. CONTRACTOR shall request inspection of seeding work by ENGINEER 60 days after completion. Grasses shall have emerged, be free of dead or dying patches (areas larger than 9 square feet), and show foliage of normal density, size and color. Any areas that do not meet these criteria shall be reseeded and established at the proper season by the CONTRACTOR at CONTRACTOR's expense.

**END OF SECTION 02945**

## SECTION 02946

### TALLGRASS MAINTENANCE PLAN

#### PART 1: GENERAL

##### 1.01 DESCRIPTION

- A. All work included in this section shall be performed in accordance with the following paragraphs and the General Requirements set forth in Division 1 of these Specifications.
- B. Work covered under this section includes providing all materials, equipment, and labor necessary for 1 year of tallgrass maintenance with the goal of fulfilling the coverage standards identified in this specification. Work includes but is not limited to:
  - 1. Mowing
  - 2. Reseeding
  - 3. Herbicide application
  - 4. Manual weed removal

##### 1.02 QUALIFICATIONS AND SUBMITTALS

- A. CONTRACTOR shall perform all work under the direct control of a superintendent conforming to the minimum qualifications, including tallgrass establishment experience and extensive plant knowledge.
  - 1. CONTRACTOR to submit a minimum of three tallgrass establishment projects (list only projects that were installed under the foreman assigned to this project). Include the project location and the Client and/or Landscape Architect's name and phone number for ENGINEER to contact.
  - 2. Foreman to have a minimum of five years of experience in tallgrass establishment and prairie management. All crews to be familiar with seeding procedures and be under the supervision of a qualified foreman.
- B. CONTRACTOR shall not change foreman without the written approval of ENGINEER.
- C. Upon first yearly herbicide and/or manual treatment conducted, CONTRACTOR shall prepare and submit an herbicide and/or manual treatment plan to the ENGINEER for approval.

##### 1.03 BASIS FOR COMPENSATION

- A. Compensation for all Work covered under this section of these Specifications shall be as set forth in Section 01270, Measurement and Payment.

#### PART 2: PRODUCTS [NOT USED]

### **PART 3: EXECUTION**

#### **3.01 COVERAGE STANDARDS**

- A.** CONTRACTOR shall maintain seeded grass areas using the coverage standards defined below for a 1-year period following final acceptance of seed work as defined in Section 02945 Tallgrass Establishment.
- B.** Coverage Standards: Growth and coverage of seeding shall meet the following standards:
  - 1.** STAGE 1 STANDARD (at end of 1st full growing season or later):
    - a.** Throughout Site, seedlings shall be of at least three native grass species widely dispersed through seeded area.
    - b.** No bare soil patches of over nine square feet shall exist.

#### **3.02 INSPECTION AND REPORTING**

- A.** Inspection and Reporting during the Maintenance Period:
  - 1.** Once a month (May through October) during the growing season, CONTRACTOR shall visit Site and inspect for invasive weed encroachment, dead plants, and bare soil areas. CONTRACTOR to notify ENGINEER 48 hours in advance of this inspection so that ENGINEER can be available for phone contact the day of inspection. CONTRACTOR to call ENGINEER from Site to discuss findings and confirm maintenance steps to perform.
  - 2.** After each inspection, CONTRACTOR shall prepare and submit to the ENGINEER an e-mail report describing the results of the inspection and recommendations for further maintenance activities with the goal of meeting the coverage standards outlined in this specification.

#### **3.03 MAINTAINANCE WORK**

- A.** CONTRACTOR shall reseed, mow, weed and otherwise perform maintenance work to achieve the Coverage Standards outlined in this specification.
- B.** Reseeding
  - 1.** If reseeding needs to occur use the seeding rates and seed mix specified in Section 02945, Tallgrass Establishment.
- C.** Herbicide or Manual Treatment
  - 1.** During scheduled inspections conduct herbicide and/or manual treatments for weed control.
  - 2.** Herbicide and/or manual treatments may be required monthly (May-October) for the first season.
  - 3.** Conduct herbicide and/or manual treatments in accordance with the approved herbicide and/or manual treatment plan.
- D.** Mowing
  - 1.** Mowing may be requested one or more times depending upon Site conditions.
  - 2.** Use a flail-type mower to prevent creation of mats of clippings.

3. Use low-profile equipment to minimize damage to soils and vegetation.
4. Mow at a height between six and eight inches. ***Do not*** mow shorter than six inches.

### 3.04 ACCEPTANCE OF WORK

#### A. Final Review:

1. At the end of the 1-year maintenance period, request a review by the ENGINEER to determine whether the work conforms to the Coverage Standards outlined in this specification.
2. If it is found that the work does not conform to the requirements of this specification, the CONTRACTOR will receive written notification from the ENGINEER of required corrections.
3. Perform corrective work within ten calendar days or such longer period as may be specified by ENGINEER, after the Final Review.
4. Upon completion of the corrective work, request another Final Review to determine whether the work conforms to the requirements of the Specifications.

- B. Final Acceptance: When the ENGINEER determines that the work conforms to the requirements of the Specifications the CONTRACTOR will receive a written notification of Final Acceptance of maintenance work.

**END OF SECTION 02946**



***Attachment B***

***Construction Quality Assurance Plan and  
Performance Standard Verification Plan  
(Includes the Air Monitoring Plan)***

**Construction Quality Assurance Plan  
and Performance Standard Verification Plan**

**Final Design Report  
Soil Operable Unit**

**Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois  
February 2004**

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# 1.0 Introduction

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This Construction Quality Assurance Plan (CQAP) describes the sampling, testing and analysis activities that will be used during implementation of the soil remedial action (RA) at the Waukegan Manufactured Gas and Coke Plant Site, which is Operable Unit 2 of the Outboard Marine Corporation Superfund Site (the Site), located in Waukegan, Illinois. The Site location is shown on the Drawings.

The selected soil remedy, as presented in the September 1999 Record of Decision (ROD) (U.S. Environmental Protection Agency (U.S. EPA), 1999), consists of five components: the PAH Remediation Zone (PRZ), the Arsenic Remediation Zone (ARZ), the Marginal Zone, Institutional Controls, and a Soil Management Plan. The ROD Remedial Action Objectives (RAOs) for soil are:

- Protect human health by reducing or eliminating exposure (direct contact, ingestion, inhalation) to soil with concentrations of contaminants representing an excess cancer risk of greater than  $1 \times 10^{-6}$  as a point of departure and a hazard index (HI) greater than 1 for reasonably anticipated future land use scenarios.
- Protect the environment by minimizing/eliminating the migration of contaminants in the soil to groundwater or to surrounding surface water bodies.
- Ensure future beneficial commercial/industrial use of the Site.

The ROD requires excavation and treatment or disposal of soil with an excess cancer risk of greater than  $1 \times 10^{-5}$  and a combination vegetative, asphalt and building cover for soil with an excess cancer risk from  $1 \times 10^{-6}$  to  $1 \times 10^{-5}$ , resulting in an industrial Site-wide cancer risk of  $1 \times 10^{-6}$  or less. The ROD soil cleanup levels are shown in Table 1.

The RA is designed to meet the ROD requirements. This CQAP will be implemented to provide information and documentation for assessing RA compliance with these objectives.

## **1.1 Overview of Soil Remedial Action**

The RA includes the excavation and treatment or disposal of contaminated soil exceeding the ROD cleanup criteria, and placement of a cover over remaining Marginal Zone soils in order to meet the ROD RAOs.

In general, the RA will involve excavation of soils from ground surface to the groundwater table within the anticipated limits shown on Drawing C-04 in Attachment A. It is anticipated that excavated material from the PRZ (approximately 28,500 cubic yards) will be divided into three categories according to visible characteristics and tested to verify the categorization. Management of the three categories will be either thermal treatment, landfill at a Subtitle D facility, or, for excavated soil that meets the ROD cleanup criteria, backfill on-site. Material excavated from the ARZ (approximately 6,000 cubic yards) will be landfilled in a Subtitle D facility. The DSS contains between 4,000 cubic yards and 5,000 cubic yards of material, which will be landfilled in a Subtitle D facility. Debris excavated from the PRZ and the ARZ will be cleaned and sized for backfill or disposal off-site. Clean debris will be sized to 6-inch minus and backfilled at the base of the excavations. Debris that cannot be cleaned satisfactorily will be managed as defined in Section 2.0.

Following excavation, backfill and compaction, a cover will be constructed over the Marginal Zone. In most areas the cover will be soil and vegetation and in other areas the cover will be asphalt.

## **2.0 Soil and Debris Categorization**

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The soil categorization process to be used to segregate excavated materials during implementation of the soil RA involves visual observations followed by analytical testing of the excavated soils. The soil categorization process for the PAH Remediation Zone (PRZ) material, the Designated Soil Stockpile (DSS) material, and the Arsenic Remediation Zone (ARZ) material is discussed in detail below. A flow diagram detailing material management during RA activities is included as Figure 1.

### **2.1 Soil Categories**

The material within the PRZ consists of tar, tar-saturated soils, oily soils, entrained debris, various sorts of fill, and some relatively clean soil and debris. The DSS material is in a membrane cell, and is generally oily sand and silt, and may include some debris. The material within the ARZ consists of sediments, soil, fill, debris, and some PRZ material. The PRZ, DSS, and ARZ are to be excavated during the RA. It is planned that excavations not extend below the groundwater table.

The plan for management of the excavated material is to separate the soil into three categories as follows:

- Category 1: Material that exceeds Toxicity Characteristic Leaching Procedure (TCLP) criteria. This material is to be treated thermally. However, this material will not be considered to be hazardous waste under federal or state RCRA.
- Category 2: Material that is below TCLP criteria but above the ROD Soil Cleanup Levels. This material is eligible for placement in a Subtitle D landfill.
- Category 3: Material that is below the ROD Soil Cleanup Levels and TCLP criteria. This material is to be backfilled in the excavations on Site.

### **2.2 Soil Excavation and Staging**

Preliminary categorization of the soil during excavation will be performed based on visible characteristics of the material. The categorization will be confirmed by testing. The testing program is presented in Section 2.4.

As soil is excavated, it will be separated into a Category 1 staging pile or placed in temporary accumulation staging piles (TASPs) as Category 2 or Category 3 soil, based on visible characteristics. Category 1 soil will not be placed in a TASP because this soil will be sent for thermal treatment. When a TASP reaches approximately 500 cubic yards, a representative composite sample will be collected and tested to confirm the categorization. Section 2.4 discusses composite sampling. Based on the outcome of the testing, each TASP will be marked or stockpiled for management according to its category.

Material placed in a Category 2 TASP based on field observations will be tested using TCLP, to confirm that it is not in fact Category 1 material. For instance, the DSS is presumed to be Category 2 material. The material placed into the DSS was designated for special management during construction of Slip No. 4. The results of TCLP tests on 4 representative samples of the DSS material collected during the Pre-Design investigation have all been below TCLP criteria (see Final Design Report, Appendix A, Table 3), showing that the DSS is not Category 1 material. Because the DSS was set aside for special management, it is not being considered eligible for Category 3. Based on these observations and test results, the DSS is considered to be Category 2. No additional testing will be conducted on the DSS material.

Material judged to be Category 3 based on field observations will be subdivided into 2 classes, Category 3a and Category 3b, which will be staged in separate TASPs. The Category 3 TASPs will be analyzed for TCLP and for the ROD cleanup criteria. The TCLP test results will be used to confirm that it does not require thermal treatment with the Category 1 material. The ROD cleanup criteria test results will determine if the pile meets ROD cleanup standards or fails and the pile is in fact Category 2. Material of ambiguous or uncertain field categorization is to be placed in separate Category 3b TASPs and tested as Category 3 in order to ascertain the correct management of the material. The intent of Category 3 is to allow clean overburden to be preserved for backfill of the excavations after verification that the excavation is complete.

## **2.3 Soil Categorization**

The following program identifies a preliminary system for determining which materials to place into each category. The categorization according to visible characteristics is subject to adjustment during construction as the field team gains experience and has test results to compare to field observations.

- Category 1 soil has the following characteristics: (a) soil that is saturated with tar, so that the soil is cohesive due to the tar (cohesive in warm weather, and cemented in cold weather); (b) soil that is completely saturated with oil, with little or no apparent water mixed with the oil, and no apparent unsaturated voids. This material will not be tested, except as required for treatment.
- Category 2 soil has the following characteristics: (a) the DSS – all the material within the DSS is considered to be Category 2 soil; (b) soil found within the limits defined for the ARZ; (c) soil outside the ARZ that contains the light-colored or striped, pasty sediment commonly found within the ARZ; (d) soil that appears to contain some tar, but is not saturated with tar, so that the soil is not cohesive due to the tar; (e) oily soil that does not appear to be saturated with oil or that has water mixed with the oil; (f) investigation-derived waste (IDW) staged at the site. This material will be subject to TCLP testing at a rate of one sample per 500 cubic yards.
- Category 3 soil is soil that visibly contains no tar and limited or no oil. Category 3 soil will be staged in 2 classes of TASP according to appearance. These TASP are to be kept separate until testing has confirmed the status of the TASP. Category 3a includes soil that appears clean and soil that is merely discolored (black or dark brown), and does not have visual or olfactory evidence of contamination. Slag, coal fines, and small construction rubble are not considered contamination. Category 3b is soil that may appear to contain some oil, in contrast to Category 3a, but nevertheless is believed to have lower PAH concentrations than the cleanup levels. The following distinguishing points may help segregate between Category 2 and Category 3b soil (subject to adjustment during the work): (a) Category 3b soil may appear superficially oily, but on close inspection can be seen to have predominantly water, and only a limited amount of oil; (b) Category 3b soil does not produce a medium or heavy scum of oil when water is placed on a sample of the soil (it may produce a medium to light sheen); (c) Category 3b soil does not contain any tar. This material will be subject to TCLP testing and testing for ROD cleanup criteria at a rate of one sample per 500 cubic yards.

## 2.4 Soil Sampling and Testing

TASP sampling will consist of collecting composite samples made up of 4 aliquots. Aliquots will be collected as grab samples approximately equally spaced around the TASP. Each grab will be collected by hand digging 10 to 14 inches into the side of TASP, approximately 1 to 4 ft above the ground surface, to expose a fresh surface and collecting the aliquot in the center of the freshly exposed area. The composite samples will be analyzed for the individual parameters discussed below



for the specific soil category. For Category 2 TASP, 1 of the 4 aliquots will be selected for a discrete sample for TCLP VOC analysis.

Category 1 soil will be sampled or tested only as needed for treatment purposes and will be stockpiled or transported directly to the treatment/disposal facility for treatment and disposal.

Category 2 soil will be subjected to testing for TCLP volatile organic compounds (VOCs), TCLP semi-volatile organic compounds (SVOCs), and TCLP arsenic. Samples from TASP that have TCLP results lower than the TCLP thresholds for all tested parameters will be eligible for disposal off-site at a Subtitle D landfill. TASP that exceed the TCLP threshold for any parameter will be recategorized as Category 1 soil and moved to the Category 1 staging area. TCLP thresholds are shown in Table 2.

Category 3 soil will be subjected to testing for TCLP RCRA metals, TCLP SVOCs, and TCLP VOCs as listed in Table 2, and for the Table 1 parameters: total arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, dibenzofuran, 4-methylphenol, and naphthalene. Samples from TASP that exceed the TCLP threshold for any parameter will be recategorized as Category 1 soil and moved to the Category 1 staging area. TASP that have TCLP results lower than the TCLP thresholds for all tested parameters and exceed one or more of the ROD soil cleanup levels will be recategorized as Category 2 soil and moved to the Category 2 staging area. TASP that have TCLP results lower than the TCLP thresholds for all tested parameters and meet the ROD soil cleanup levels will be backfilled on-site.

## **2.5 Debris Categorization**

Debris excavated from the contaminated soil excavations will be either: (1) cleaned and (a) backfilled on-site, or (b) recycled or disposed of off-site as clean debris; or (2) sized to meet maximum size requirements specific to the disposal facilities and treated/disposed with the contaminated soil.

The guideline that will be used to judge satisfactory cleaning will be as stated in the Land Disposal Restrictions, 40 CFR 268.45, Table 1, Footnote 3: "Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor

discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.

Debris cleaned to this standard will be either backfilled on-site or sent off-site as clean debris for recycling or disposal.

If the debris cannot be cleaned to meet the above standard it will be sized and managed with the Category 2 soil. Debris stockpiles will be inspected, and if cleaning is satisfactory based on visual inspection, approved for sizing. Sized debris will then be visually inspected to verify that the size requirement has been satisfied (6-inch minus). Clean debris that meets the size requirement will be approved for backfilling following inspection.

## **3.0 Performance Standard Verification Plan**

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This section addresses verification sampling to confirm limits of excavation and achieve ROD soil cleanup levels. The soil quality at the perimeter of each excavation will be evaluated to verify the limits of excavation. Analytical samples will be collected and analyzed for comparison to the ROD soil cleanup levels (Table 1). Details of the verification sampling plan follow.

### **3.1 Excavation Verification Sampling**

The objective of the confirmatory sampling program is to ensure that the ROD soil cleanup levels, as shown in Table 1, have been reached. Post-excavation samples will be collected from the exposed sidewalls and bottom (if above the water table) to verify soil quality at the excavation limits. In general, excavations will be completed to the limits shown in the construction plans, although the limits of surface patches of tar or small discrete excavation areas will be assessed in the field (the limits of small patches of material shown in Attachment A, Drawing C-04 were used for the purposes of estimating remedial volumes, and are not intended to reflect defined excavation limits). De minimis quantities of materials in the subsurface, as determined by observation in the field, may be left in place.

Smaller excavation areas (less than 125 ft circumference) will have samples collected at the four compass points. If the base of the excavated area is located above the groundwater table, a composite sample will be collected from the excavation bottom. Excavation areas larger than that will have samples collected every 25 feet along the excavation walls. The samples will be subjected to the verification sampling procedures as described below in Steps 2 through 7.

For excavation perimeters larger than 125 feet in circumference, the attainment of the soil cleanup goals will be evaluated using the process defined below. In general, the verification sampling program is designed to trigger expansion of the excavation under any of three scenarios: 1) any verification sample that exceeds the  $1.0 \times 10^{-4}$  RHE; 2) if two or more adjacent sample concentrations exceed the  $1.0 \times 10^{-5}$  RHE; or 3) if non-adjacent samples exceed the  $1.0 \times 10^{-5}$  RHE and the statistical-based procedure shows the 95 percent upper confidence level on the mean exceeds  $1.0 \times 10^{-5}$  RHE. This process is based on U.S. EPA *Methods for Evaluating the Attainment of*

*Cleanup Standards, Volume 1: Soils and Soil Media*, Chapter 6, EPA230/02-89-042, 1989 (Cleanup Attainment Guidance). As applied to this Site, the process will involve the following steps:

- **Step 1. Number of Sidewall Verification Sampling Points:** Samples will be collected approximately every 25 feet along the sidewalls of each excavation. The measured perimeter length in feet will be divided by 25 feet and rounded to the nearest larger whole number to determine the number of verification samples necessary.
- **Step 2. Vertical Sidewall Sampling:** The sidewall verification samples will be representative of the entire excavation depth. A composite sample will be collected along the excavated wall from six inches below ground surface to the base of the excavation, or six inches above the water table.

Sidewall verification sampling will consist of collecting composite samples made up of up to 4 aliquots. Aliquots will be collected as grab samples approximately equally spaced in the vertical dimension. The number of aliquots composited into each sidewall sample will be approximately one aliquot for every foot of depth of the excavation. Each grab will be collected by hand digging 3 inches into the sidewall to expose a fresh surface and collecting the sample in the center of the freshly exposed area. The sampler will enter the excavation if the excavation has been inspected by a "competent person" and been judged safe to enter according to Occupational Safety and Health Administration (OSHA) standards, or is shallow and does not trigger OSHA excavation requirements. If standing water is present in the bottom of the excavation, if the excavation has not been inspected by a "competent person", or if the excavation has been judged unsafe to enter according to OSHA standards, samples will be collected from an excavator bucket.

- **Step 3. Base of Excavation Sampling:** If the base of the excavated area is located above the groundwater table, a composite sample will be collected from the excavation bottom. Two verification samples will be collected for every 0.5-acre of exposed area. Where the base of the excavated area extends to the groundwater table no samples will be collected from the base of that portion of the excavation.

Base of excavation verification sampling will consist of collecting composite samples made up of 4 aliquots. Aliquots will be collected as grab samples approximately equally spaced across each 0.25-acre area. Each grab will be collected by hand digging 3 inches into the base to expose a fresh surface and collecting the sample in the center of the freshly exposed area. The sampler will

enter the excavation if the excavation has been inspected by a "competent person" and been judged safe to enter according to OSHA standards, or is shallow and does not trigger OSHA excavation requirements. If standing water is present in the bottom of the excavation, if the excavation has not been inspected by a "competent person" or if the excavation has been judged unsafe to enter according to OSHA standards, samples will be collected from an excavator bucket.

- **Step 4. Analysis:** Each verification sample will be submitted for chemical analysis to determine concentrations of the constituents of concern (i.e. ROD Soil Cleanup Levels). The samples will be analyzed for the all the ROD specified parameters listed in Table 1.
- **Step 5. Comparison to Soil Cleanup Levels:** In the event that all the results of the verification soil data meet the ROD soil cleanup levels, that portion of the excavation is complete and may be backfilled.
- **Step 6. Excavation Expansion:** If verification analytical results are greater than the  $1.0 \times 10^{-4}$  RHE at any single location, the relevant portions of the excavated perimeter will be expanded. If two or more adjacent samples exceed ROD soil cleanup levels, that area of the excavation will be expanded. The expanded portions will be treated as new excavated areas, which will be subjected to the verification sampling procedures as described in Steps 1 through 4. Evaluation of the data in accordance with Steps 5 through 7 will use a modified data set consisting of the samples from the expanded excavation and the data from the portion of the excavation not affected by the expansion.
- **Step 7. Statistical Confirmation:** In the event that the results of the verification soil data are such that 2 or more adjacent samples exceed the ROD Soil Cleanup Levels, and all are less than the  $1.0 \times 10^{-4}$  RHE, a statistically-based procedure may be used to confirm satisfactory removal. The results of verification soil data will be added to the existing subsurface data set in each area. Using the expanded data set, subsurface representative exposure concentrations (RECs) in each exposure domain (delineated in Figure 2), will be computed as the 95 percent upper confidence limit of the mean concentration (95% UCL). Ninety-five percent UCLs will be computed for each of the constituents of concern. The computed subsurface soil RECs will be compared to the  $1.0 \times 10^{-5}$  ROD soil cleanup levels. In the event that the results of the statistical confirmation meet the ROD soil cleanup levels, that portion of the excavation is complete and may be backfilled. If the 95% UCL for a given exposure domain exceeds the ROD soil cleanup levels,

the area of the excavation with the highest sample results will be expanded. The expanded portions will be treated as new excavated areas, which will be subjected to the verification sampling procedures as described in Steps 1 through 4. Evaluation of the data in accordance with Steps 5 through 7 will use a modified data set consisting of the samples from the expanded excavation and the data from the portion of the excavation not affected by the expansion.

The above procedure provides a conservative process to confirm attainment of the RAOs at the Site.

## **4.0 Borrow Soil, Backfill and Compaction, Soil Cover, and Water Testing**

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### **4.1 Off-Site Borrow Soil Testing**

Sampling will be conducted to screen for potential contamination in the off-site borrow soils used during the RA. There will be several off-site borrow soils from clean borrow sources, which will be proposed by the selected contractor and approved by the WCP Group. At least one soil sample will be collected from each of the borrow material sources. If the soil appearance changes during the work, more samples may be analyzed as necessary to screen for potential contamination.

The borrow soil samples will be analyzed for the parameters listed in Table 3. Borrow sources will only be acceptable if the sample concentrations are in the range of background levels or meet Illinois TACO Tier 1 standards, as appropriate (Table 3). In addition to analytical testing, borrow soils may be intermittently field screened at the Site for discoloration, odors, and elevated headspace.

The upper six inches of the Marginal Zone cover soil will be suitable as topsoil according to Illinois Department of Transportation Standard Specifications. Certification that soil meets the specified requirements will be provided by the selected remediation contractor.

### **4.2 Soil Compaction**

Borrow soil and sized debris (after cleaning as appropriate) will be backfilled and compacted in the excavations. Backfill will be placed in the excavations in lifts not to exceed 1 foot in depth. Each backfilled lift will be compacted to achieve acceptable soil density. All backfill 1 foot or more below the normal ground surface is to be compacted to 95 percent standard proctor density or greater. The compaction for the upper foot of backfill depends on the surface cover to be installed. Where the surface cover will be vegetation, the compaction is to be suitable for plant growth, and the soil should be smoothed or firmed, like topsoil, rather than compacted to a specified standard proctor density.

In the areas where asphalt-parking surface restoration is planned, the upper foot of borrow soil is to be compacted to 95 percent standard proctor density or greater.

Proctor testing of each backfill material will be conducted prior to use. Compaction testing for density of backfilled materials in these areas will include one or both of the following methods:

nuclear method (ASTM D2922), sand cone method (ASTM D1556). Density tests will be performed on the backfilled material at the rate of one test per 5,000 cubic yards of backfill, with a minimum of one test per excavation.

The Marginal Zone Soil Cover (MZSC) will be smoothed, but will not be compacted.

### **4.3 Marginal Zone Soil Cover**

Soil samples will be collected over the western portion of the Site to verify that the proposed MZSC extent meets the requirements set forth in the ROD (U.S. EPA; 1999). Samples will be collected over areas that were inaccessible during previous investigations, and are exposed as a result of the RA work. The known areas to be sampled are: 1) the area covered by the DSS; and 2) the area of removal to normal grade of On-Site Borrow (OSB, note: this was formerly referred to as the Dredged Soil Spoils Stockpile). Other areas to sample will be identified to U.S. EPA prior to implementing the sampling. Two sampling locations will be selected for every 0.5 acres of previously uninvestigated areas.

Surface soil samples will be obtained at each location for classification, field screening and laboratory analysis for the ROD soil cleanup levels listed in Table 1. Sample results will be compared to the  $1.0 \times 10^{-6}$  excess carcinogenic risk levels (Table 1 values divided by a factor of 10) and the groundwater protection value for arsenic of 25 mg/kg. The soil cover will be extended or modified as necessary based on the sampling results.

Standard land survey methods will be used to verify the cover thickness over the marginal zone. An initial survey of the Marginal Zone Area will be performed after completion of the backfilling and compacting activities. The survey will be based on a 50-foot grid. Following placement and rolling of the MZSC, a final survey will be performed on the same 50-foot grid. Verification of the 6-inch or 10-inch cover thickness will be completed by comparing initial and final elevations at each grid point, prior to planting and seeding. A minimum cover thickness of 6 inches, or 10 inches in areas where OSB has been used as backfill, will be acceptable. Additional topsoil will be placed in areas that do not meet the minimum cover thickness and these areas will be resurveyed. An as-built Site drawing showing cover elevation and thickness data will be prepared for the final report.



#### **4.4 Testing of Treated Water**

Decontamination water and contaminated soil stockpile runoff water will be collected and treated. Treated water will be tested by the contractor for on-site use suitability prior to release of the water. Water samples will be collected from the treatment effluent and analyzed for cyanide, Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), PAHs, benzene, toluene, ethylbenzene, and xylenes (Table 4). The contractor will not be allowed to discharge or use water until test results from the batch demonstrate compliance with the criteria listed in Table 4. Analytical data, validated by the contractor, will be submitted to the U.S. EPA for discharge approval. If the analytical data from the sample meets Illinois TACO Class II groundwater remediation objectives (Table 4) for the analyzed parameters and is approved by the U.S. EPA, the water will be used for dust control of Category 1 or 2 staging piles *and TASPs or discharged into the treated water discharge area indicated on Drawing C-03 in Attachment A.* If the analytical data from the sample meets Illinois TACO Class I groundwater remediation objectives (Table 4) for the analyzed parameters and is approved by the U.S. EPA, the water may be used for site-wide dust control, discharged into the treated water discharge area indicated on Drawing C-03 in Attachment A, or used to water the Site following seeding.

## 5.0 Air Monitoring Plan

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Air monitoring will be conducted throughout RA construction. Air monitoring will consist of both perimeter and exclusion zone dust monitoring. Respirable dust monitoring will be conducted with real-time particulate monitoring equipment (Miniram, or equivalent). Exclusion zone monitoring will be conducted by the contractor. Dust levels within the exclusion zone will be compared to the nuisance dust emission standard of  $5 \text{ mg/m}^3$ . Particulate monitoring equipment will also be placed at specified upwind and downwind perimeter monitoring locations and readings will be recorded twice daily and if dusty conditions are observed. The anticipated perimeter monitoring locations are shown on the Drawing C-03 in Attachment A to the Final Design Report. Visual dust monitoring will be ongoing as part of construction observation activities. Visual dust observations will be recorded twice daily, at a minimum. Visual observations will include noting dust conditions within the exclusion zone at individual work zones and along perimeter areas. The ambient air quality standard of  $150 \text{ }\mu\text{g/m}^3$  will be used for comparison to the real-time dust monitoring levels. The Miniram readings will be used as an indicator of air quality. In the event that perimeter dust levels exceed the ambient air quality standard of  $150 \text{ }\mu\text{g/m}^3$ , the contractor will be notified. The contractor will be responsible to initiate actions to control dust and /or change work conditions to reach acceptable air quality, including keeping construction roads watered and stockpiles covered or mulched when not in use. The contractor will not be required to achieve better air quality than reported at the upwind side of the Site. If air quality routinely exceeds  $150 \text{ }\mu\text{g/m}^3$  during the work, or if Miniram results are believed to overstate the observed dust levels, other monitoring methods may be employed.

Temporary perimeter air monitoring locations will be established during RA construction to evaluate airborne particulate and organic vapor levels at both the harbor-side and the beach-side of the Site, as shown on Drawing C-03. Monitoring at these locations is to be performed daily for the first two weeks of RA contaminated soil excavation using real-time particulate monitoring equipment and a photoionization detector (PID). If these temporary locations indicate particulate emissions below the ambient air quality standard and the organic vapor concentration action level these locations will be monitored on an infrequent basis for the remainder of RA construction.

Benzene monitoring (using Draeger tubes or equivalent) will be conducted once daily, at a minimum, for the first week of excavation in the southern PRZ excavation area at the downwind perimeter of

the excavation, three feet above the ground surface. If exceedances of the action level (1 part per million) are observed during excavation perimeter monitoring, additional benzene monitoring will be conducted at the construction perimeter and at the perimeter of occupied areas (Bombardier Recreational Products facility). If benzene emissions do not exceed the action levels during the first week of monitoring, benzene monitoring will cease. If significant odors are noted during subsequent excavation work, benzene monitoring may be conducted on a case-by-case basis.

The air monitoring program may be modified during RA construction in response to the monitoring results.

## **6.0 Reporting**

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The results from testing conducted throughout construction will be reported as discussed below.

### **6.1 Excavation Verification Sampling**

The results from the verification testing will be communicated to the U.S. EPA on a systematic basis as the work progresses. Results will be available on-site as they are received and will be sent to the U.S. EPA weekly. If the excavation verification sample results meet the ROD soil cleanup levels, the excavation will be backfilled. If the excavation verification sample results do not meet the ROD soil cleanup levels and require statistical analysis according to Step 7 of the verification sampling procedure, U.S. EPA concurrence will be sought prior to backfilling that specific area of the excavation. Sample turn around time for laboratory analyses will be two weeks and data validation will take an additional week. Backfill decisions will be based on validated data.

### **6.2 TASP Sampling**

The results from the TASP testing will be communicated to the U.S. EPA on a systematic basis as the work progresses. Results will be available on-site as they are received and will be sent to the U.S. EPA weekly. If the TASP sample results meet the ROD soil cleanup levels and the TCLP thresholds, the TASP will be staged as Category 3 and backfilled on-site. If the TASP sample results meet the TCLP thresholds but do not meet the ROD soil cleanup levels, the TASP will be staged as Category 2 and disposed off-site. Sample turn around time for laboratory analyses will be one week. TASP categorization decisions will be based on preliminary data. Data validation will be conducted within one week of receiving the data.

### **6.3 Compaction Testing**

The results of compaction testing will be included in the final report. Compaction test results will also be available on-site for review during RA activities.

## **6.4 Marginal Zone Soil Cover**

The survey data from the MZSC thickness verification will be submitted to the U.S. EPA in tabular form and a survey drawing. A comparison table with subgrade and final grade elevations, showing cover thickness, will be prepared and included in the final construction report. A MZSC as-built drawing with elevation points will also be submitted as part of the final report.

## **6.5 Treated Water**

The test results from the treated water will be available on-site as they are received and will also be submitted to the U.S. EPA weekly. Sample turn around time for laboratory analyses will be no more than one week, followed by data validation. Discharge decisions will be based on validated data.

## **6.6 Air Monitoring**

Air monitoring results will be available on-site as they are collected and will also be submitted to the U.S. EPA weekly.

## **6.7 Final Report**

A report describing the results of the work performed will be prepared after completion of the RA activities. In accordance with EPA guidance for RARs, the report will include documentation from the work including: scaled Site record drawings showing sample locations and areas of excavation; cover thickness documentation; chain of custody and laboratory reports; field data sheets and field screening results; selected photographs of the work; and survey data.

## References

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U.S. Environmental Protection Agency, 1999. Record of Decision, Remedial Action, Outboard Marine Company/Waukegan Coke Plant Superfund Site, Waukegan, Illinois, September 1999.

**Table 1**

**ROD Soil Cleanup Levels  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois**

<b>Chemical</b>	<b>Commercial/Industrial RHE<sup>1</sup> (mg/kg)</b>	<b>Utility/Construction RHE<sup>1</sup> (mg/kg)</b>
Arsenic	2,050	940
Benzo(a)anthracene	1,500	1,160
Benzo(a)pyrene	150	116
Benzo(b)fluoranthene	1,500	1,160
Dibenzo(a,h)anthracene	150	116
Indeno(1,2,3-cd)pyrene	1,500	1,160
Dibenzofuran <sup>2</sup>	NA	5,390
4-Methylphenol <sup>2</sup>	NA	6,738
Naphthalene <sup>2</sup>	NA	48,556

<sup>1</sup> RHE - Representative high exposure, 1 x 10<sup>-5</sup> excess cancer risk.

<sup>2</sup> Non-cancer risk, hazard index = 1.

Table 2  
TCLP Threshold Values  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois

Parameter	EPA TCLP Threshold Value (ug/L)
<b>Metals</b>	
Arsenic, TCLP	5000
Barium, TCLP	100000
Cadmium, TCLP	1000
Chromium, TCLP	5000
Lead, TCLP	5000
Mercury, TCLP	200
Selenium, TCLP	1000
Silver, TCLP	5000
<b>SVOCs</b>	
2,4,5-Trichlorophenol, TCLP	400000
2,4,6-Trichlorophenol, TCLP	2000
2,4-Dinitrophenol, TCLP	130
Hexachlorobenzene, TCLP	130
Hexachlorobutadiene, TCLP	500
Hexachloroethane, TCLP	3000
m-Cresol, TCLP	200000
Nitrobenzene, TCLP	2000
o-Cresol, TCLP	200000
p-Cresol, TCLP	200000
Methylphenols (Cresols), total, TCLP	200000
Pentachlorophenol, TCLP	100000
Pyridine, TCLP	5000
<b>VOCs</b>	
1,1-Dichloroethylene, TCLP	700
1,2-Dichloroethane, TCLP	500
1,4-Dichlorobenzene, TCLP	7500
Benzene, TCLP	500
Carbon tetrachloride, TCLP	500
Chlorobenzene, TCLP	100000
Chloroform, TCLP	6000
Methyl ethyl ketone, TCLP	200000
Tetrachloroethylene, TCLP	700
Trichloroethylene, TCLP	500
Vinyl chloride, TCLP	200



Table 3

**Off-Site Fill Criteria  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois**

Parameter	Concentration (mg/kg)
<b>Inorganics</b>	
Aluminum <sup>1</sup>	9,500
Antimony <sup>1</sup>	4.0
Arsenic <sup>1</sup>	13.0
Barium <sup>1</sup>	110
Beryllium <sup>1</sup>	0.59
Cadmium <sup>1</sup>	0.6
Calcium <sup>1</sup>	9,300
Chromium <sup>1</sup>	16.2
Cobalt <sup>1</sup>	8.9
Copper <sup>1</sup>	19.6
Cyanide <sup>1</sup>	0.51
Iron <sup>1</sup>	15,900
Lead <sup>1</sup>	36.0
Magnesium <sup>1</sup>	4,820
Manganese <sup>1</sup>	636
Mercury <sup>1</sup>	0.06
Nickel <sup>1</sup>	18.0
Potassium <sup>1</sup>	1,268
Selenium <sup>1</sup>	0.48
Silver <sup>1</sup>	0.55
Sodium <sup>1</sup>	130
Sulfate <sup>1</sup>	85.5
Sulfide <sup>1</sup>	3.1
Thallium <sup>1</sup>	0.32
Vanadium <sup>1</sup>	25.2
Zinc <sup>1</sup>	95.0
VOCs	Must meet all Illinois TACO Tier 1 standards
SVOCs	Must meet all Illinois TACO Tier 1 standards
Pesticides	Must meet all Illinois TACO Tier 1 standards
Polychlorinated biphenyls (PCBs)	Must meet all Illinois TACO Tier 1 standards
Radionuclides	Must be at or below background levels

<sup>1</sup>Background soil concentration, TACO Section 742, Appendix A, Table G

Table 4  
Treated Water Discharge Criteria  
[Applicable Illinois Class I and II Groundwater Remediation Ingestion Standards]  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois

Parameter	Illinois Groundwater Remed. Ingest - Class I (mg/L)	Illinois Groundwater Remed. Ingest - Class II (mg/L)
Date	2/5/2002	2/5/2002
<u>General Parameter</u>		
Cyanide	0.2	0.6
<u>RCRA Metals</u>		
Arsenic	0.05	0.2
Barium	2.0	2.0
Cadmium	0.005	0.05
Chromium	0.1	1.0
Lead	0.0075	0.1
Mercury	0.002	0.01
Selenium	0.05	0.05
Silver	0.05	-
<u>PAHs</u>		
Acenaphthene	0.42	2.1
Acenaphthylene	-	-
Anthracene	2.1	10.5
Benzo(a)anthracene	0.00013	0.00065
Benzo(a)pyrene	0.0002	0.002
Benzo(b)fluoranthene	0.00018	0.0009
Benzo(g,h,i)perylene	-	-
Benzo(k)fluoranthene	0.00017	0.00085
Chrysene	0.0015	0.0075
Dibenz(a,h)anthracene	0.0003	0.0015
Fluoranthene	0.28	1.4
Fluorene	0.28	1.4
Indeno(1,2,3-cd)pyrene	0.00043	0.00215
Naphthalene	0.14	0.22
Phenanthrene	-	-
Pyrene	0.21	1.05
<u>BTEX</u>		
Benzene	0.005	0.025
Ethyl benzene	0.7	1.0
Toluene	1.0	2.5
Xylenes total	10.0	10.0

- No standard.

## *Figures*

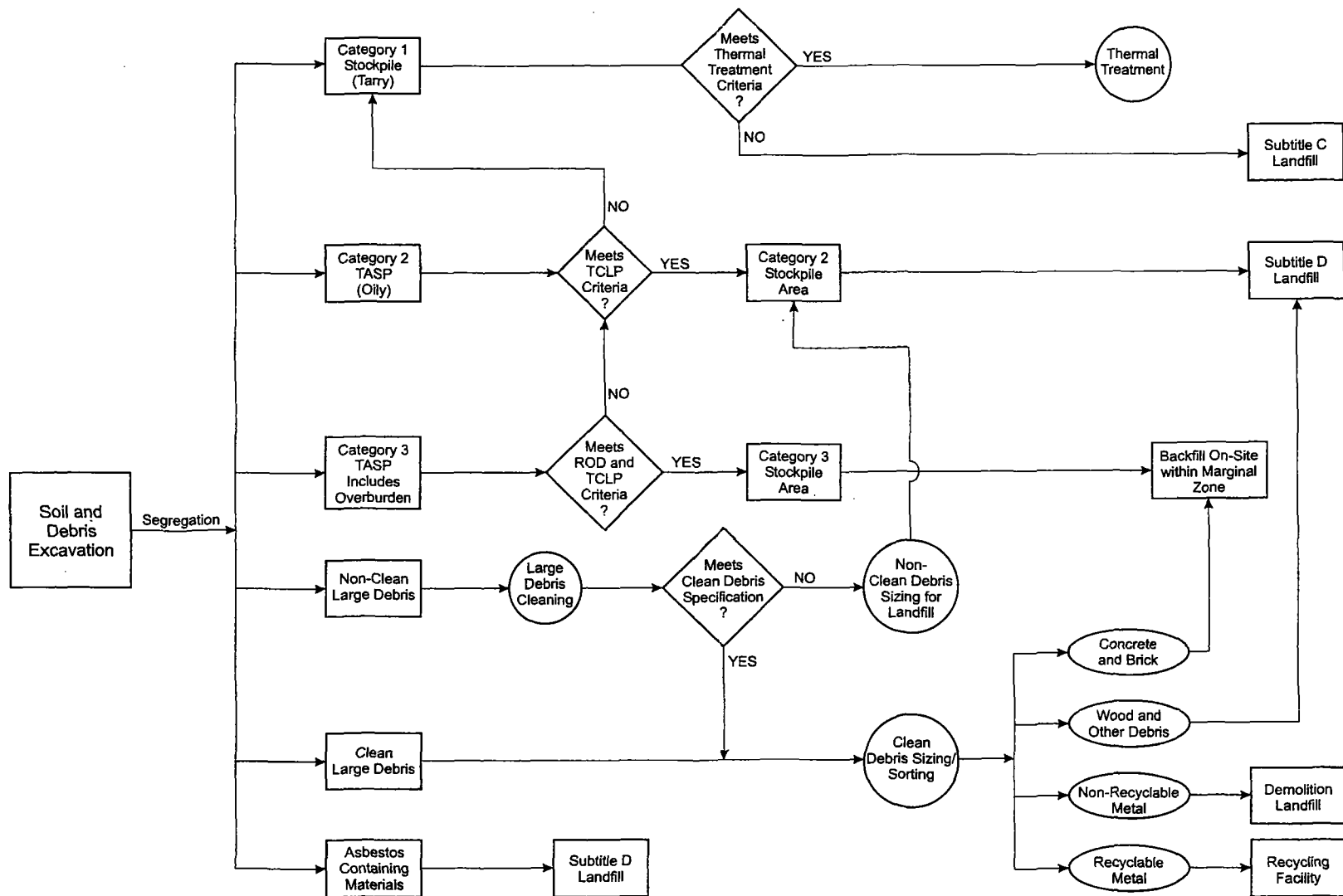
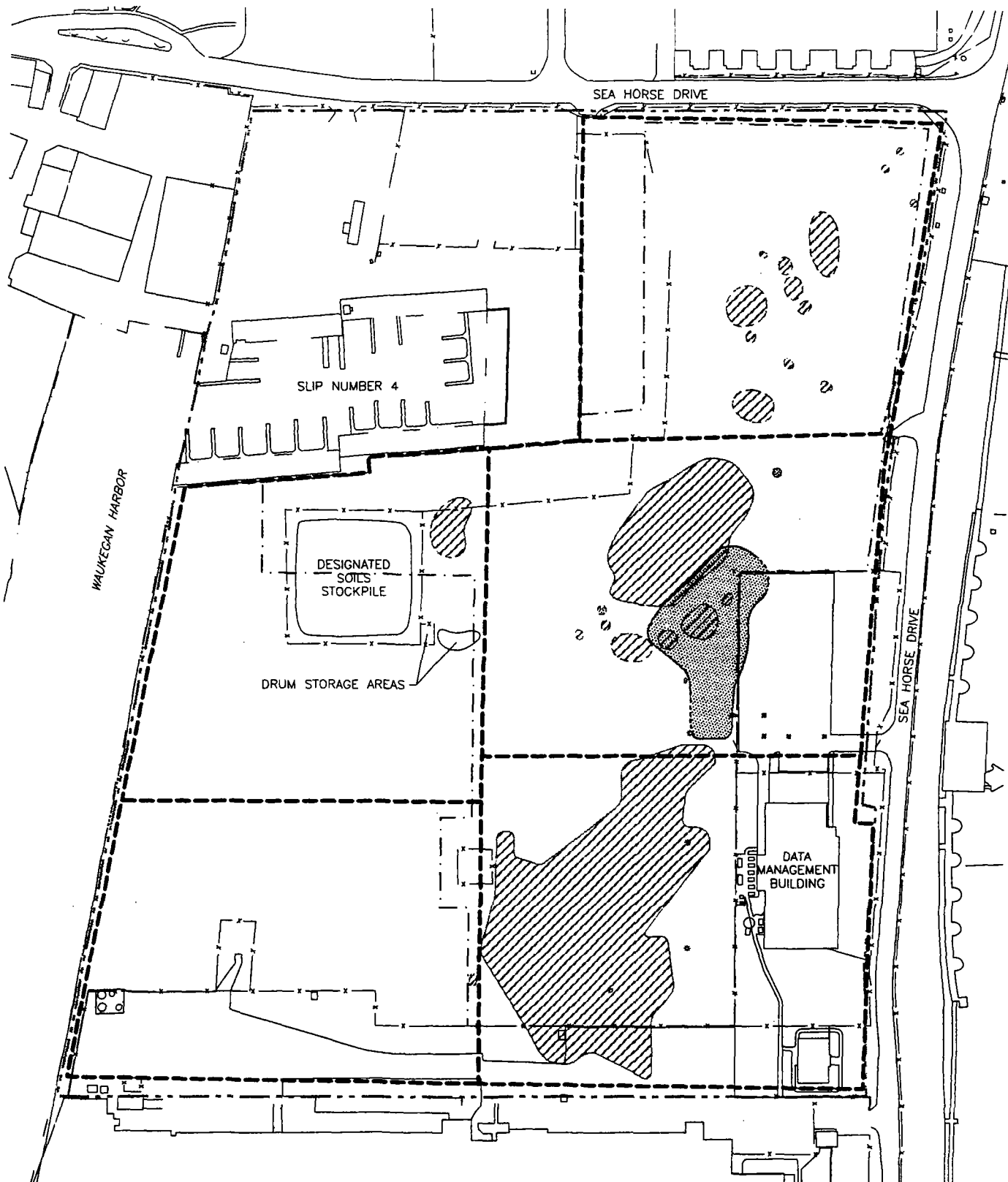




Figure 1

MATERIALS MANAGEMENT FLOW DIAGR  
Waukegan Manufactured Gas and Coke Plant  
Waukegan, Illinois

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 rjw M:\CAD\1349015\18286\_1.DWG Plot at 1 05/16/2003 11:28:29



- 5 ACRE DOMAINS
-  PAH REMEDIATION ZONE
-  ARSENIC REMEDIATION ZONE
- MARGINAL SOIL ZONE

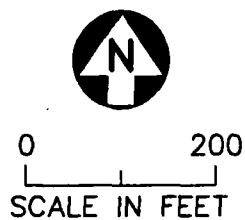


Figure 2  
 EXPOSURE DOMAINS  
 Waukegan Manufactured Gas  
 and Coke Plant Site  
 Waukegan, Illinois

***Attachment C***

***Field Sampling Plan***

***(Bound Separately)***

***Attachment D***

***Quality Assurance Project Plan***

***(Bound Separately)***

***Attachment E***  
***Health and Safety Plan***  
***(Bound Separately)***



**Attachment P**

***Operation and Maintenance Plan***

**Attachment F**  
**Operation and Maintenance Plan**  
**Final Design Report**  
**Soil Operable Unit**

**Waukegan Manufactured Gas and Coke Plant Site**  
**Waukegan, Illinois**  
**February 2004**

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Appendix A Inspection Form

# 1.0 Introduction

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This Operation and Maintenance Plan (O&M Plan) describes the program for maintenance of the Marginal Zone Soil Cover and tallgrass establishment that will be used following completion of the soil remedial action (RA) at the Waukegan Manufactured Gas and Coke Plant Site. The Waukegan Manufactured Gas and Coke Plant Site is Operable Unit 2 of the Outboard Marine Corporation Superfund Site (the Site), located in Waukegan, Illinois. The Site location is shown on Drawing G-01 in Attachment A.

The selected soil remedy, as presented in the September 1999 Record of Decision (ROD) (U.S. Environmental Protection Agency (U.S. EPA), 1999), consists of five components: the PAH Remediation Zone (PRZ), the Arsenic Remediation Zone (ARZ), the Marginal Zone, Institutional Controls, and a Soil Management Plan. One of the ROD Remedial Action Objectives (RAOs) for soil that this plan addresses is:

- Protect human health by reducing or eliminating exposure (direct contact, ingestion, inhalation) to soil with concentrations of contaminants representing an excess cancer risk of greater than  $1 \times 10^{-6}$  as a point of departure and a hazard index (HI) greater than 1 for reasonably anticipated future land use scenarios.

The ROD requires excavation and treatment or disposal of soil with an excess cancer risk of greater than  $1 \times 10^{-5}$  and a combination vegetative, asphalt and building cover for soil with an excess cancer risk from  $1 \times 10^{-6}$  to  $1 \times 10^{-5}$ , resulting in an industrial Site-wide cancer risk of  $1 \times 10^{-6}$  or less.

The RA includes the excavation and treatment or disposal of contaminated soil exceeding the ROD cleanup criteria, and placement of a cover over remaining Marginal Zone soils in order to meet the ROD RAOs. Following excavation, backfill and compaction, a cover will be constructed over the Marginal Zone. In most areas the cover will be soil and vegetation and in other areas the cover will be asphalt, or in areas used by Larsen Marine for storage, gravel.

The O&M consists of establishing and maintaining the native grass cover. As other cover is established over portions of the Site, maintenance of those areas shall be performed consistent with the requirements of the Soils Management Plan.

## **2.0 Marginal Zone Soil Cover Maintenance**

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The Marginal Zone Soil Cover (MZSC) will be constructed and vegetated as part of the RA. The details of the MZSC are shown in Attachment A, Drawing C-05 and are described in Sections 02300, 02945, and 02946 of the Technical Specifications. Maintenance of the MZSC will include establishment of the native grasses and inspection and repair, if necessary, of the soil cover. The specific maintenance tasks are discussed in this section.

The vegetation selected for the cover is a combination of four native perennial grass species: big bluestem, little bluestem, switch grass, and Indian grass. O&M is required to establish and maintain these tallgrasses.

The design basis for the tallgrass cover includes a three-year establishment period. That is, it will take three years for the various tallgrass species to become established at the Site. The three-year establishment period will be conducted with the goal of fulfilling the coverage standards identified in paragraph 2.2. Maintenance work during this period includes: mowing, reseeding, herbicide application, and manual weed removal. After the tallgrass cover is established, routine O&M will be conducted.

### **2.1 Inspection and Reporting**

For the first three years after the initial planting of the cover, in the months of April, May, July, September, and October, the contractor will visit the site and inspect for invasive weed encroachment, dead plants, and bare soil areas. For the first three years, the contractor will contact the engineer from the Site to discuss findings and confirm maintenance steps to perform.

The soil cover will also be inspected during the routine inspections. The soil cover will be observed for holes, washout, or other deterioration. The purpose of the inspection is to identify major defects in the cover that may compromise the ability of the soil cover to prevent direct contact exposure.

After each inspection, an inspection report must be submitted to the engineer describing the results of the inspection and recommendations for further maintenance activities with the goal of meeting the tallgrass coverage standards and maintaining the minimum cover thickness. An inspection form is included in Appendix A.

Following the three-year tallgrass establishment period, inspections of the MZSC will continue on an annual basis. Annual inspections will continue for 30 years or until other cover is established.

## **2.2 Tallgrass Coverage Standards**

Growth and coverage of seeding will be monitored in accordance with the following standards:

1. STAGE 1 STANDARD (at end of 1st full growing season): Throughout the Site, seedlings shall be of at least three native grass species widely dispersed through the seeded area. No bare soil patches of over nine square feet shall exist.
2. STAGE 2 STANDARD (at end of 2nd growing season): Site shall have a 60% cover of native seed mix grasses. No bare soil patches of over four square feet shall exist.
3. STAGE 3 STANDARD (at end of 3rd growing season): Site shall have a 70% cover of native seed mix grasses. No bare soil patches shall exist.

## **2.3 Contractor Qualifications**

The contractor performing the tallgrass O&M will conduct all work under the direct control of a superintendent with tallgrass establishment experience and extensive plant knowledge. The foreman should have a minimum of five years of experience in tallgrass establishment and prairie management. All crews will be required to be familiar with seeding procedures and be under the supervision of a qualified foreman.

## **2.4 Tallgrass Maintenance**

### **2.4.1 Reseeding**

If reseeding is necessary, it will be conducted in accordance with the seeding rates and seed mix specified on Drawing C-05 of Attachment A to the Final Design Report or alternate recommendation approved by the engineer.

### **2.4.2 Herbicide or Manual Treatment**

The contractor will prepare a herbicide and/or manual treatment plan at the beginning of each year that will be reviewed and approved by the WCP Group representative or the engineer. Herbicide

treatments will be conducted in accordance with the approved herbicide and/or manual treatment plan.

Herbicide and/or manual treatments for weed control will be conducted during scheduled inspections or as recommended by the engineer. Herbicide and/or manual treatments may be required with each inspection for the first three years.

### **2.4.3 Mowing**

Mowing may be conducted one or more times per year depending upon Site conditions or as recommended by a qualified native grass professional. A flail-type mower will be used to prevent creation of mats of clippings. Low-profile equipment will also be used to minimize damage to soils and vegetation. The grasses will be mowed to a height between six and eight inches. Mowing grasses shorter than six inches will be prohibited.

## **2.5 Tallgrass Establishment Acceptance**

A Final Review will be conducted at the end of the 3-year establishment period to determine whether the tallgrass conforms to the coverage standards outlined in paragraph 2.2. If it is found that the tallgrass establishment does not conform to the requirements, corrective work will be conducted. After completion of the corrective work, another Final Review will be scheduled for the fourth year to determine whether the corrective work conforms to the requirements of the coverage standards. If the tallgrass requirements are not met after the three-year establishment period, Final Reviews will continue each year until the tallgrass conforms to the coverage standards specified. Following Final Acceptance of the tallgrass establishment, mowing will be conducted annually, if necessary, in the late summer, or more often if warranted by Site conditions.

## **3.0 Reporting**

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Summaries of the scheduled inspections and operation and maintenance activities will be compiled in annual O&M reports, which will be submitted to the U.S. EPA. Annual reports will include copies of the inspection forms and the dates and details of corrective actions conducted during the year.

***Appendix A***

***Inspection Form***



## Inspection Form

Soil Remedial Action Operation and Maintenance  
Waukegan Manufactured Gas and Coke Plant Site  
Waukegan, Illinois

Date \_\_\_\_\_

Inspector \_\_\_\_\_

Weather \_\_\_\_\_

Item	Inspect For	Condition	Notes
Soil Cover Integrity	Cover compromise due to soil erosion, poor vegetation, holes, rodents or burrowing animals, etc.		
Tallgrass	Coverage, # of native grass species present, bare soil		
Fence Integrity	Damaged fabric, gates, etc.		

Corrective actions conducted since previous inspection: \_\_\_\_\_

Comments: \_\_\_\_\_

Inspection Duration \_\_\_\_\_

## ***Attachment G***

### ***Soils Management Plan Outline***

# **Soil Management Plan Outline**

## **Waukegan Manufactured Gas and Coke Plant Site**

1. Introduction
  - 1.1. ROD Remedy Summary
  - 1.2. Purpose Of SMP
  - 1.3. Organization Of SMP
2. Site Characterization After Remedial Action
  - 2.1. Extent Of Soil Removal
  - 2.2. Soil Data Summary For Remaining Soil
  - 2.3. Groundwater Management Zone
3. Institutional Controls
  - 3.1. Intended Land Use
  - 3.2. Land Use Controls
  - 3.3. Groundwater Use Controls
  - 3.4. Monitoring And Enforcement Of Controls
4. Excavation, Soil Management, And Ground Cover
  - 4.1. Excavation Requirements
    - 4.1.1. Backfill And Cover
    - 4.1.2. Dewatering Water Considerations
  - 4.2. Dredging Requirements
  - 4.3. Sampling, Testing, and Disposal
    - 4.3.1. For Backfill On Site
    - 4.3.2. For Removal From The Site
  - 4.4. Infiltration/Stormwater Management Expectations
5. Changes In Land Use
6. Contacts And Resources
  - 6.1. EPA, IEPA
  - 6.2. List Of Reports And Information Sources

### Tables

ROD Cleanup Standards For Soil  
Soil Data Summary Tables  
Site-Specific Analytical Parameters

### Figures

Soil Removal Locations, With Approximate Locations Of Utilities  
Marginal Zone Cover Location  
Soil Sample Data Summary, Selected Parameters